

STATE OF HAWAII
DEPARTMENT OF HEALTH
P.O. Box 3378
Honolulu, HI 96801-3378

In reply, please refer to:
File:

**JOINT ADVISORY BOARD: NEUROTRAUMA & STATE TRAUMATIC BRAIN
INJURY ADVISORY BOARD (NTAB & STBIAB)**

MEETING MINUTES

DATE: February 1, 2018

Present: Albert Burian, Rita Manriquez, Stephanie Yee, Lisa Dau

Excused: William Rodrigues, Kawena Young, Mary Wilson

Others: Lyna Burian, Brain Injury Association of Hawaii (BIA); Violet Horvath, Director of Pacific Disabilities Center (PDC); Tomoko Hotema, PDC; Dylan Arrieta, PDC; Terry Jasper Jr., PDC; Dan Galanis, Department of Health (DOH); Nicholas Hines, DOH; Bridget Velasco, DOH; Troy Furutani, University of Manoa (UH)-HCAMP; Allison Tsuchida, UH-HCAMP; Brien Ing, UH-HCAMP; Dr. Matthew Koenig, Queen's Medical Center

DOH Staff: Curtis Inouye, Neurotrauma Supports; Chelsea Ko, Neurotrauma Supports; Cristina Valenzuela, Neurotrauma Supports, Wendie Lino, Community Alternatives Section Supervisor

I. Speaker: Dan Galanis

A. Report on Neurotrauma Statistics

Epidemiologist Dan Galanis of the Department of Health (DOH) injury prevention and control section presented a statistical overview on Neurotrauma in Hawaii regarding traumatic brain injury (TBI), spinal cord injury (SCI), and stroke.

In summary, Dr. Galanis states that there are roughly 13,600 TBI occurrences each year, with increasing numbers stemming from emergency room visits. Risks are noticeably higher on O'ahu in toddlers, teens, and seniors. Seniors are the leading age group amongst those hospitalized due to unintentional falls. SCIs account for 165 admittances each year, showing higher risks on the neighbor islands at a progressive rate across age range. The Hawaii Stroke registry reported 2,740 people per year as having stroke. Statistics show that only half of patients are being transported by EMS. Studies have found that recognizing the signs of stroke during dispatch increased patient level of survival. For more information, please see attached Neurotrauma Statistics report.

II. Contract Overview

A. Head Neck Spine

The Head Neck Spine project is an online curriculum geared to educating middle school students on the seriousness of head, neck, and spinal cord injuries. It was created to meet the Hawaii Content Performance Standards III and certain learning objectives for health. Objectives include knowledge, advocacy, interpersonal communication, and an analysis of different resources.

Per Allison Tsuchida of the Hawaii Concussion Awareness Management Program (HCAMP), they have completed five modules with three more modules, in progress, which will complete the online curriculum. HCAMP is working with the Department of Education (DOE) to identify teachers who can help to validate the content and ensure the standards are being met. They are also in the progress of creating a teacher's manual for the curriculum. HCAMP is looking to launch the project during the next school year in Fall 2018. For more information, please see attached Project Head, Neck, Spine report.

B. Neurotrauma Registry

The purpose of the Neurotrauma registry is to assist DOH in identifying resources and support needed by traumatic brain injury (TBI), spinal cord injury (SCI), and stroke survivors, help educate service providers, and develop safety and prevention plans and policies. Dr. Violet Horvath of the Pacific Disabilities Center (PDC) reiterated the three goals of the neurotrauma registry project: 1) to encourage TBI survivors to take the survey, 2) provide education to the general public and professionals statewide about neurotrauma injury and registry, and 3) provide free

information and referral service to the public. For more information, please see attached HNTR Joint Meeting Presentation.

C. Stroke Network

Dr. Matthew Koenig of Queen's Medical Center (QMC) provided an overview of the tele-stroke project-

Stroke and tPA:

- Stroke is the number one cause of chronic disability in adults and the number three cause of death in Hawaii.*
- tPA is the only FDA approved treatment for acute stroke and must be administered within 4.5 hours of symptoms.*
- The standard of care is the initiation of tPA within 60-minutes of patient's arrival to the ER.*

Stroke treatment:

- Low tPA utilization in Hawaii at start of the project in 2010*
- Delays in treatment time*
- High variability in tPA utilization among Hawaii hospitals due in part to inconsistent neurology coverage*

Hub and spoke models:

- Neurologists available 24/7/365 for teleconsultation at central location*
- Provide service to multiple hospitals (spokes) for acute stroke tPA decisions*
- Empower hospitals to administer tPA and manage patients after tPA*

The tele-stroke grant, issued by the DOH Neurotrauma special funds, provided the means for tele-medicine equipment, ongoing technical support, bandwidth rentals, public education, travel expenses for site visits and provider education. It also includes a sustainability plan with subscription-based business model after the public support ends.

The tele-stroke contract ends on June 1, 2019, pending a contract modification. For more information, please see attached DOH Telestroke report.

III. Call to Order-Advisory Board Meeting– Meeting was called to order by Neurotrauma Advisory Board Chair, Scott Sagum. Quorum present.

IV. Approval of Minutes from the July 20, 2017 meeting – Board Member Rita Manriquez made a motion to accept the Minutes as written. Board Member Stephanie Yee seconded the motion. All Board Members present voted in favor of minutes being accepted as written. No questions or discussions.

V. Review of Agenda – All Board Members present voted in favor of accepting the agenda as written. No questions or discussions.

VI. New Business

A. Neurotrauma Strategic Plan: Implementation

The Neurotrauma Supports staff is asking for continued involvement during the implementation phase by providing feedback and serving on committees aimed to accomplish the three goals of the Neurotrauma strategic plan. During the meeting, there were three individual objectives highlighted that requested feedback from all those that attended to answer the following questions: 'Who should be involved?' and 'Ideas/Suggestions.' The highlighted objectives are as follows:

- Goal 1/Objective 1.3: Increase awareness and knowledge on Neurotrauma and identification among disability and health care providers*
- Goal 2/Objective 2.1: Increase data reporting to obtain a more accurate assessment of the needs of individuals*
- Goal 3/Objective 3.1: Research to identify and expand the database of services and supports currently available in order to link survivors of Neurotrauma and family members to resources*

VII. Old Business

A. Hawaii Islands Regional Stroke Network Update:
(refer to Contract Overview on page 1)

B. Update on Brain Injury Awareness Month – March 2018 Update:

DOH staff is currently working to launch the Unmasking Brain Injury project during Brain Injury Awareness month. They have already conducted two community mask events, with one more event scheduled for February 4, 2018. Currently, ten masks have been created and completed by TBI survivors. Masks will be displayed at three different locations: Rehabilitation Hospital of the Pacific, Pearlridge Center, and the State Capitol.

Per Dr. Horvath of PDC, they are currently requesting rights to show the movie 'Concussion' that will be made free to the public and are searching for a speaker to talk about brain injury before the showing.

C. Pacific Disabilities Center (PDC)-Hawaii Neurotrauma Registry (HNTR)

Update:

HNTR and DOH met with Laura Rachal, Director of Oahu Heart and Stroke Walk, to discuss HNTR's possible participation in the Oahu, Hilo, and Maui Heart and Stroke Walks in 2018 and ways the organizations could work together. HNTR plans to do more presentations for organizations, such as Meals on Wheels. Contact PDC to provide contact information on organizations that may be interested in learning more about the registry. For March Brain Injury Awareness month, PDC is planning to show the movie, Concussion and have speakers provide information about brain injury. PDC is working on copyright permission for the movie. Event will be free to public, will have popcorn and light refreshments. For more information, please see HNTR Update Report.

D. Brain Injury Association (BIA) of Hawaii Update:

*BIA is currently going through a re-organization of its board. Current BIA members are able to nominate other board members to be on their advisory board. Non-members interested in joining BIA will pay the following fee: \$10 for individuals and \$25 for professionals.
No other updates.*

E. Neighbor Island TBI Activities:

*Neurotrauma Supports will be travelling to Kauai on February 14th to provide the Brain Injury Group (BIG) with information on the Unmasking Brain Injury Project.
No other updates.*

F. DOH Update:

*Neurotrauma Supports will be collaborating with Nicholas Hines of EMS/DOH to update the Neurotrauma strategic plan.
No other updates.*

VIII. Announcements

A. Brain Injury Association of Hawaii (BIA):

1) *Support Group and Educational Meetings*

- a. *First Saturdays, 1-3 p.m., 2nd and 3rd Wednesdays, 6-8p.m.,
Rehabilitation Hospital of the Pacific, Wo Conference Room #4.***

IX. *Next Meeting:*

Date: March 15, 2018

Location: Kinau Hale, Room #329 and via Zoom

<https://zoom.us/j/606524903>

Time: 1:30 p.m. to 4:00 p.m.

Meeting Adjourned at 3:00 p.m.

Hawaiian Islands Regional Stroke Network Queens Telestroke Program



Matthew Koenig, MD, FNCS
Medical Director of Telehealth
The Queen's Healthcare Systems

Associate Professor of Medicine
The John A. Burns School of Medicine

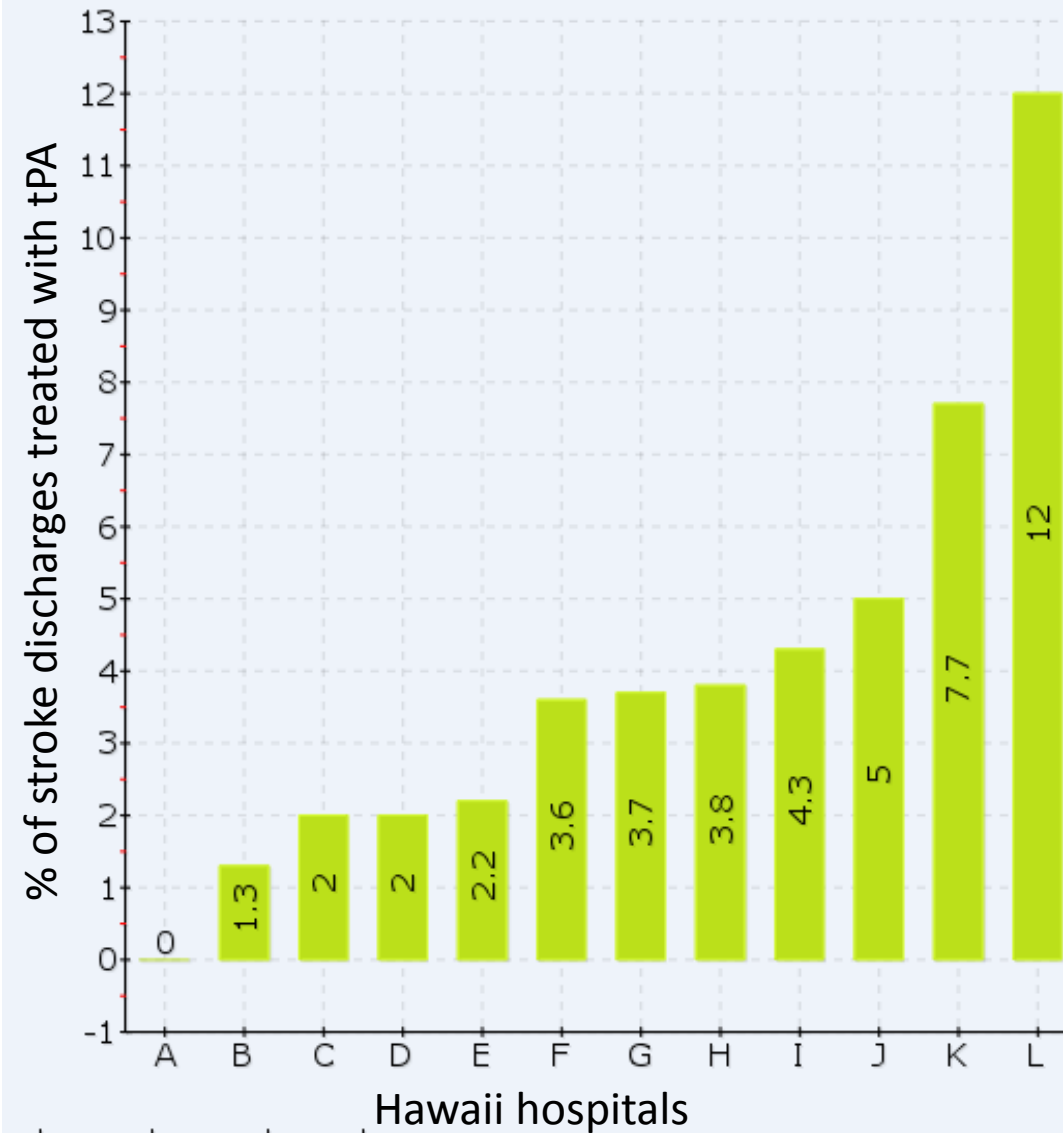
Stroke and tPA

- Stroke is the #1 cause of chronic disability in adults, the #3 cause of death in Hawaii
- IV tPA is the only FDA-approved treatment for acute stroke
- IV tPA must be administered within 4.5 hours of symptom onset
- Standard of care is initiation of IV tPA within 60 minutes of patient arrival to the ER

Stroke Treatment

- Low tPA utilization in Hawaii at start of the project in 2010
- High variability in tPA utilization among Hawaii hospitals due in part to inconsistent neurology coverage
- Delays in treatment time

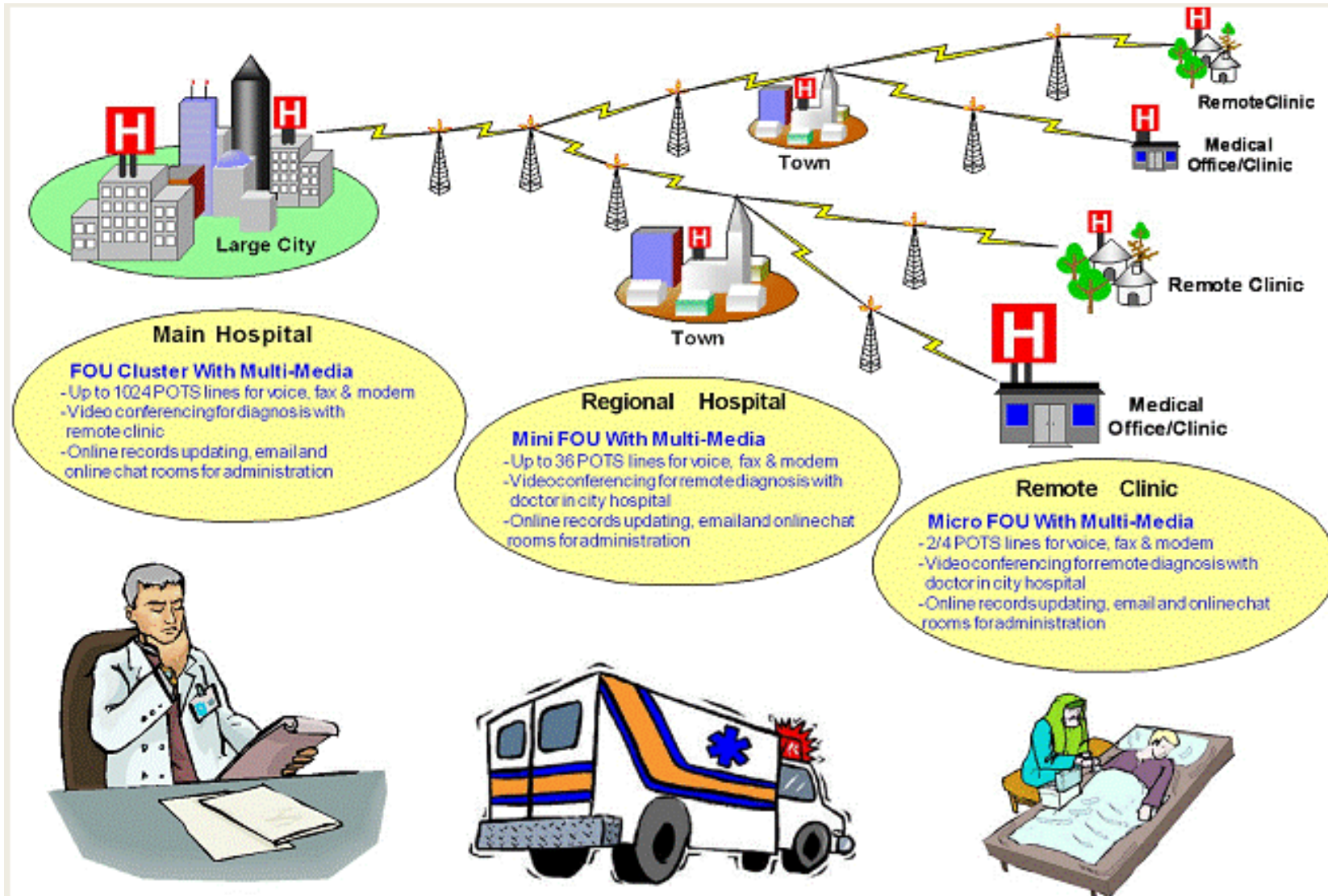
tPA Utilization (%) 2009-2012 by Hawaii Hospitals



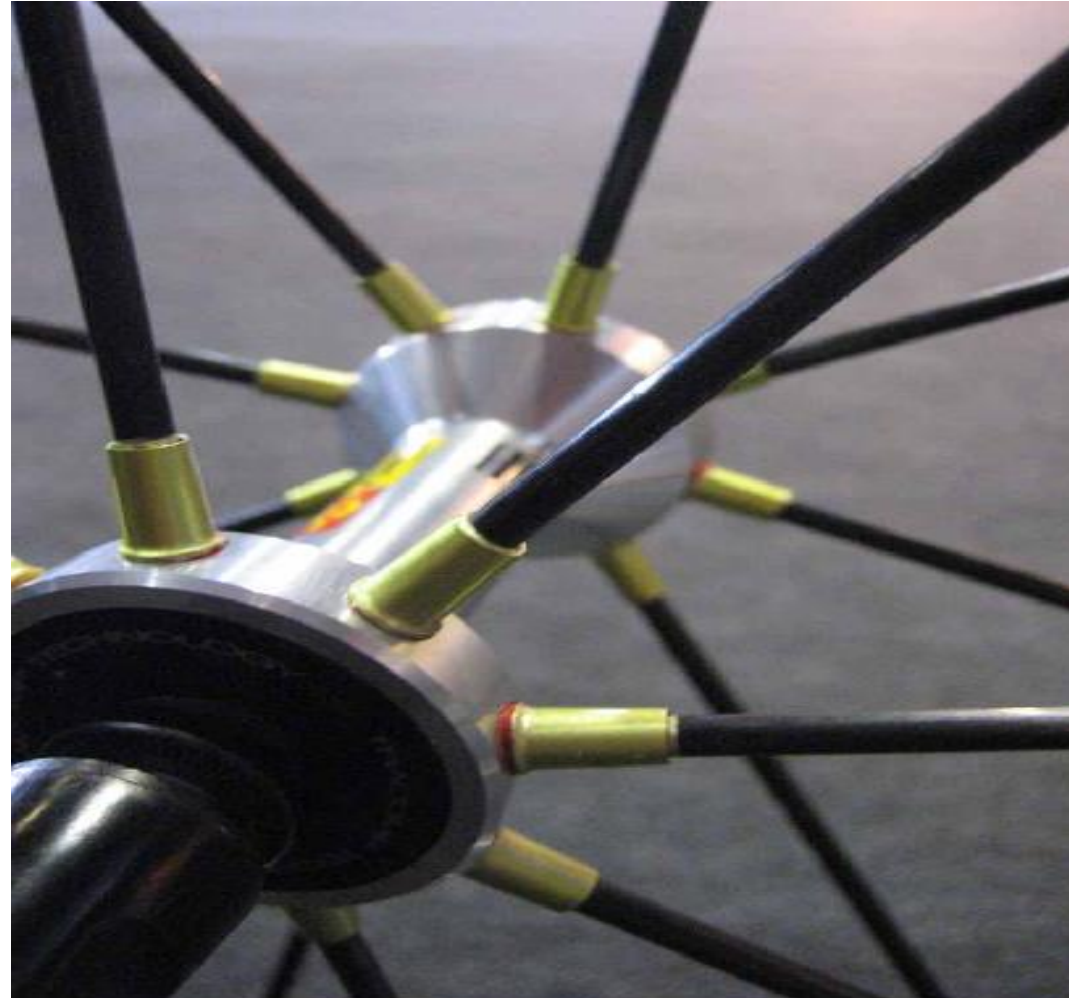
Neurologist Distribution



Telemedicine



Hub-and-Spoke Models of Telemedicine



Hub and Spoke Models

- Neurologist available 24/7/365 for teleconsultation at central location (hub)
- Provide service to multiple hospitals (spokes) for acute stroke tPA decisions
- Empower hospitals to administer tPA and manage patients after tPA (drip-and-keep)
- Triage patients who need a higher level of care to hub (drip-and-ship)

AHA/ASA Scientific Statement

A Review of the Evidence for the Use of Telemedicine Within Stroke Systems of Care

A Scientific Statement From the American Heart Association/American Stroke Association

The American Academy of Neurology (AAN) affirms the value of this paper as an educational tool for neurologists.

Lee H. Schwamm, MD, FAHA, Co-Chair; Robert G. Holloway, MD, MPH, Co-Chair;
Pierre Amarenco, MD, FAHA; Heinrich J. Audebert, MD; Tamilyn Bakas, RN, DNS, FAHA, FAAN;
Neale R. Chumbler, PhD; Rene Handschu, MD; Edward C. Jauch, MD, MS, FAHA;
William A. Knight IV, MD; Steven R. Levine, MD, FAHA; Marc Mayberg, MD, FAHA;
Brett C. Meyer, MD; Philip M. Meyers, MD, FAHA; Elaine Skalabrin, MD;
Lawrence R. Wechsler, MD, FAHA; on behalf of the American Heart Association Stroke Council and
the Interdisciplinary Council on Peripheral Vascular Disease

Abstract—The aim of this new statement is to provide a comprehensive and evidence-based review of the scientific data evaluating the use of telemedicine for stroke care delivery and to provide consensus recommendations based on the available evidence. The evidence is organized and presented within the context of the American Heart Association's Stroke Systems of Care framework and is classified according to the joint American Heart Association/American College of Cardiology Foundation and supplementary American Heart Association Stroke Council methods of classifying the level of certainty and the class of evidence. Evidence-based recommendations are included for the use of telemedicine in general neurological assessment and primary prevention of stroke; notification and response of

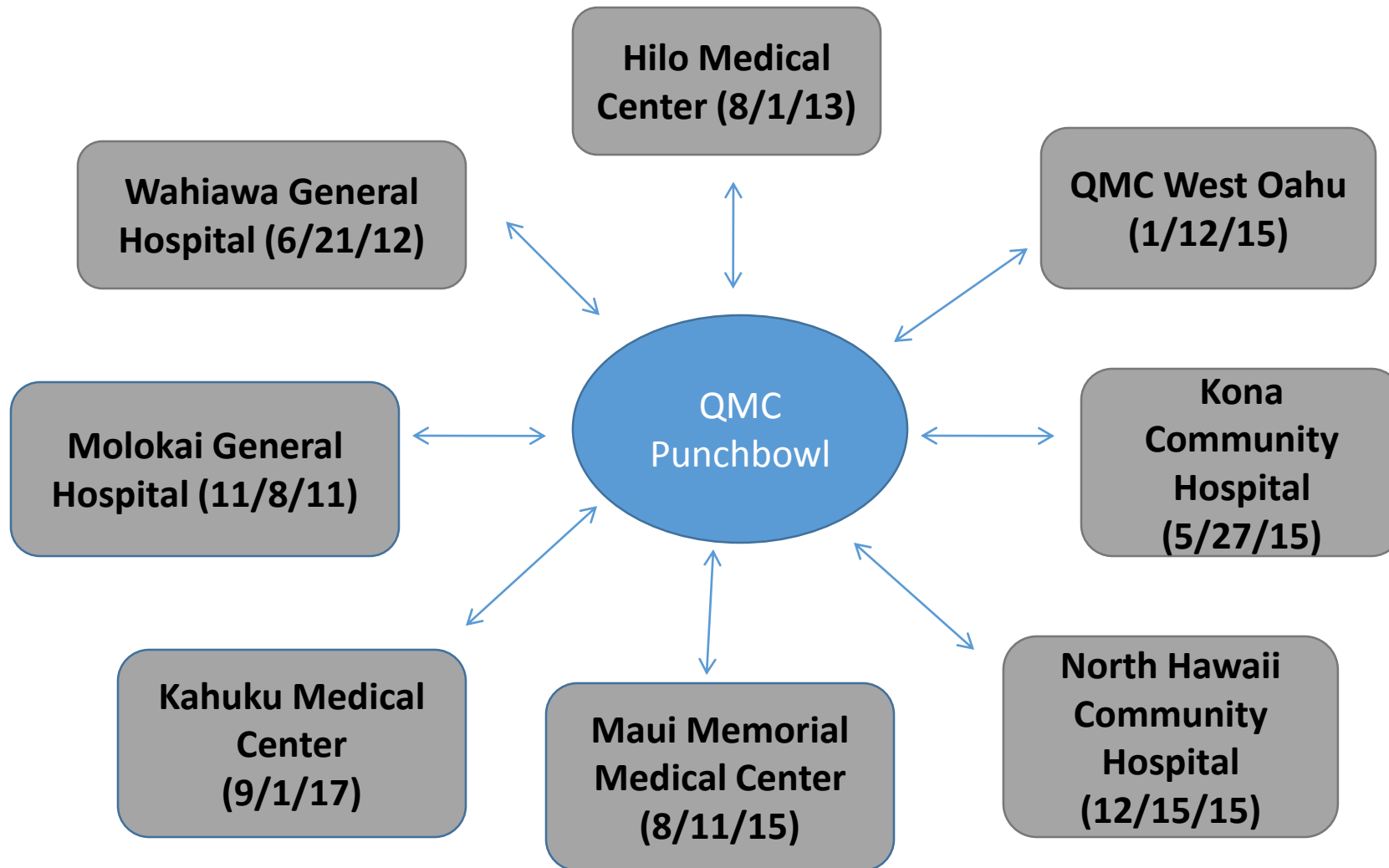
AHA/ASA Scientific Statement

A Review of the Evidence for the Use of Telemedicine Within Stroke Systems of Care

Class I Recommendation

1. It is recommended that a stroke specialist using HQ-VTC provide a medical opinion in favor of or against the use of intravenous tPA in patients with suspected acute ischemic stroke when on-site stroke expertise is not immediately available (*Class I, Level of Evidence B*).

Hawaiian Islands Regional Stroke Network





Video format

Motion JPEG ▼

Hilo ED Hawaii Stroke Network

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Video

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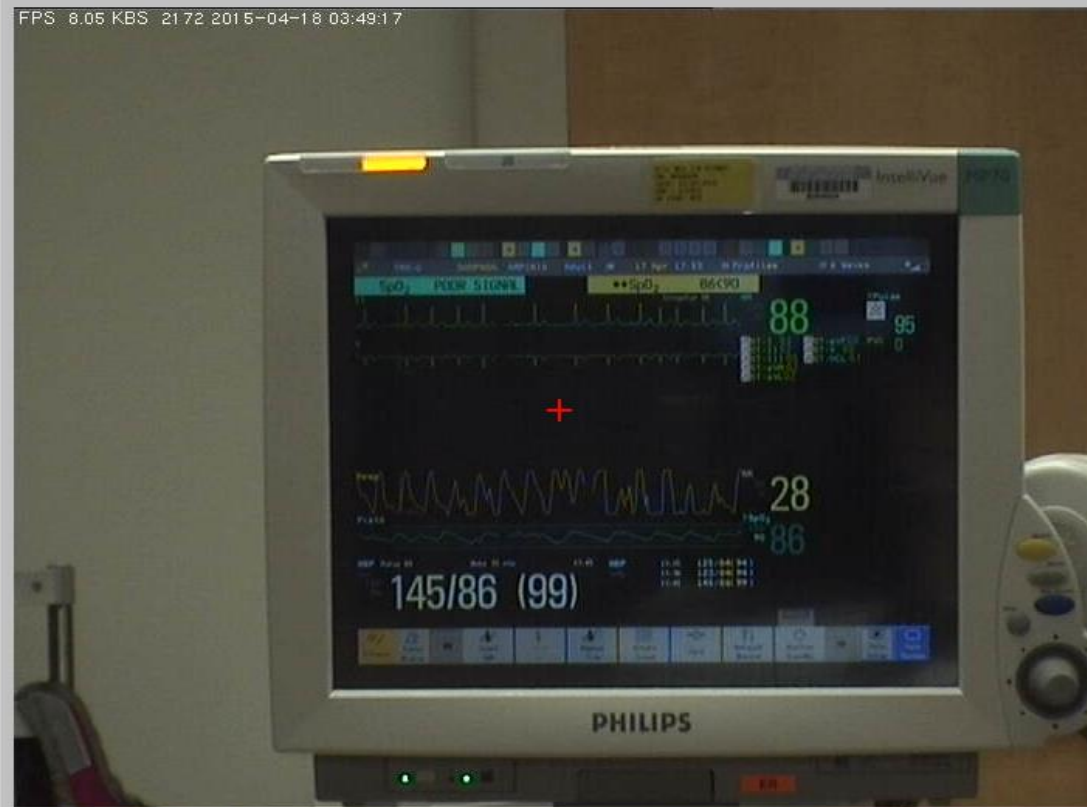
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Hilo ED Hawaii Stroke Network

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Video format

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Hilo ED Hawaii Stroke Network

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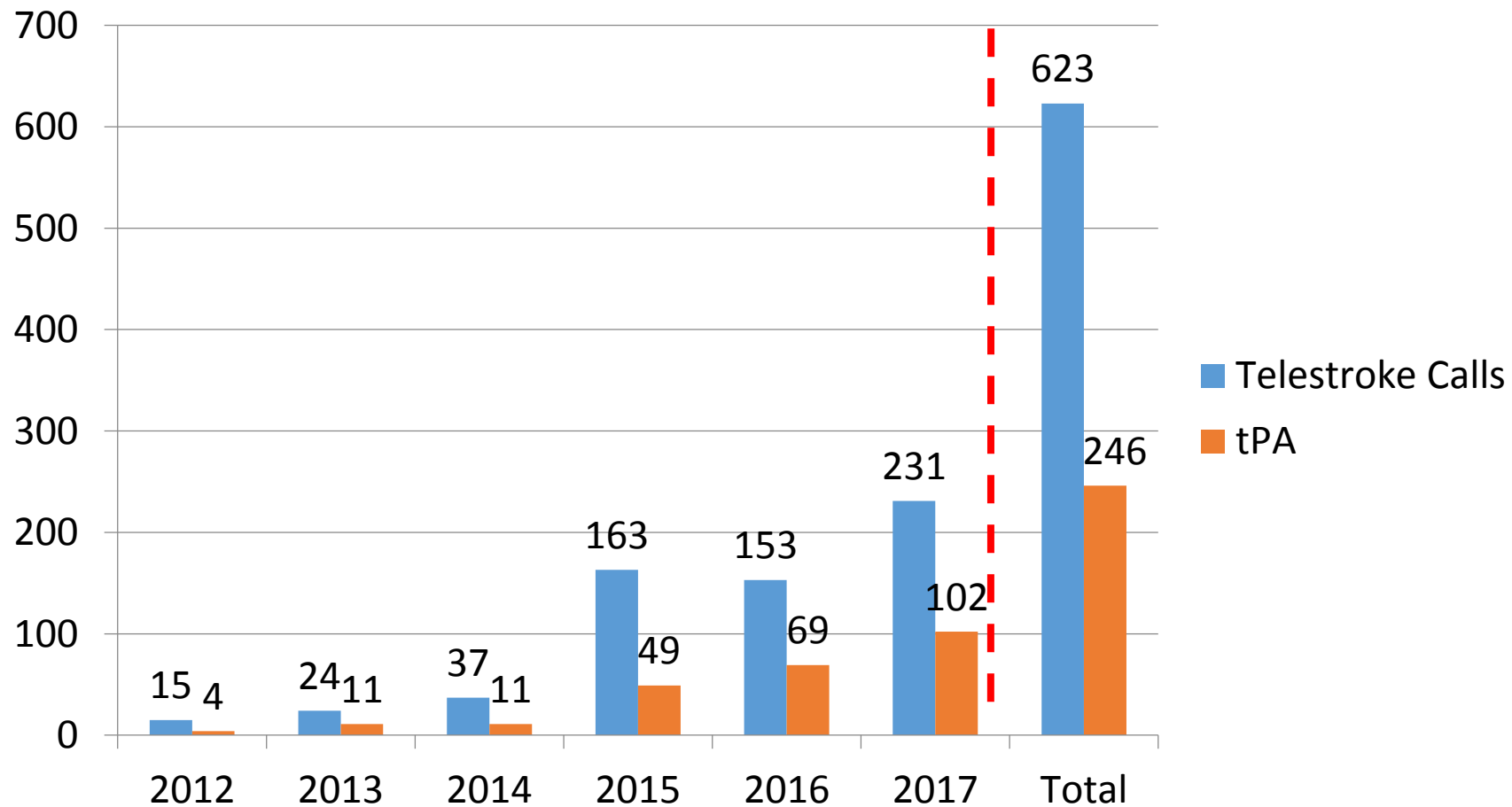
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Staffing Model

- QMC-employed neurologists on-call
- 24/7/365 teleconsultation for acute stroke
 - Remotely review the CT scan through BEAM
 - Examine the patient via telemedicine cart
 - Identify contraindications/indications and discuss risk/benefit of IV tPA
 - Recommend for or against IV tPA
 - Triage whether patient needs transfer or can remain at originating site

Annual Telestroke Rates 2012-2017



\$45,000 direct medical cost savings per tPA-treated patient = \$11.07 million to date

Total Calls	748		
Incomplete Calls	122	Triage calls, not telestroke	75
		Technical difficulties	47
Completed Calls	626	Molokai General Hospital (MGH)	29
		Wahiawa General Hospital (WGH)	66
		Hilo Medical Center (HMC)	87
		The Queen's Medical Center West (QMC-W)	289
		Kona Community Hospital (KCH)	62
		Maui Memorial Medical Center (MMMC)	27
		North Hawaii Community Hospital (NHCH)	35
		The Queen's Medical Center Punchbowl	30
		Kahuku Medical Center	1
# IV tPA Administrations	246	# Transferred to QMC Punchbowl	167
		# Not transferred-remained at site or transferred to another institution	79
Total Transfers to QMC Punchbowl	229	Non tPA Transfers	62

Activity year to date 01/01/17 to 12/31/2017

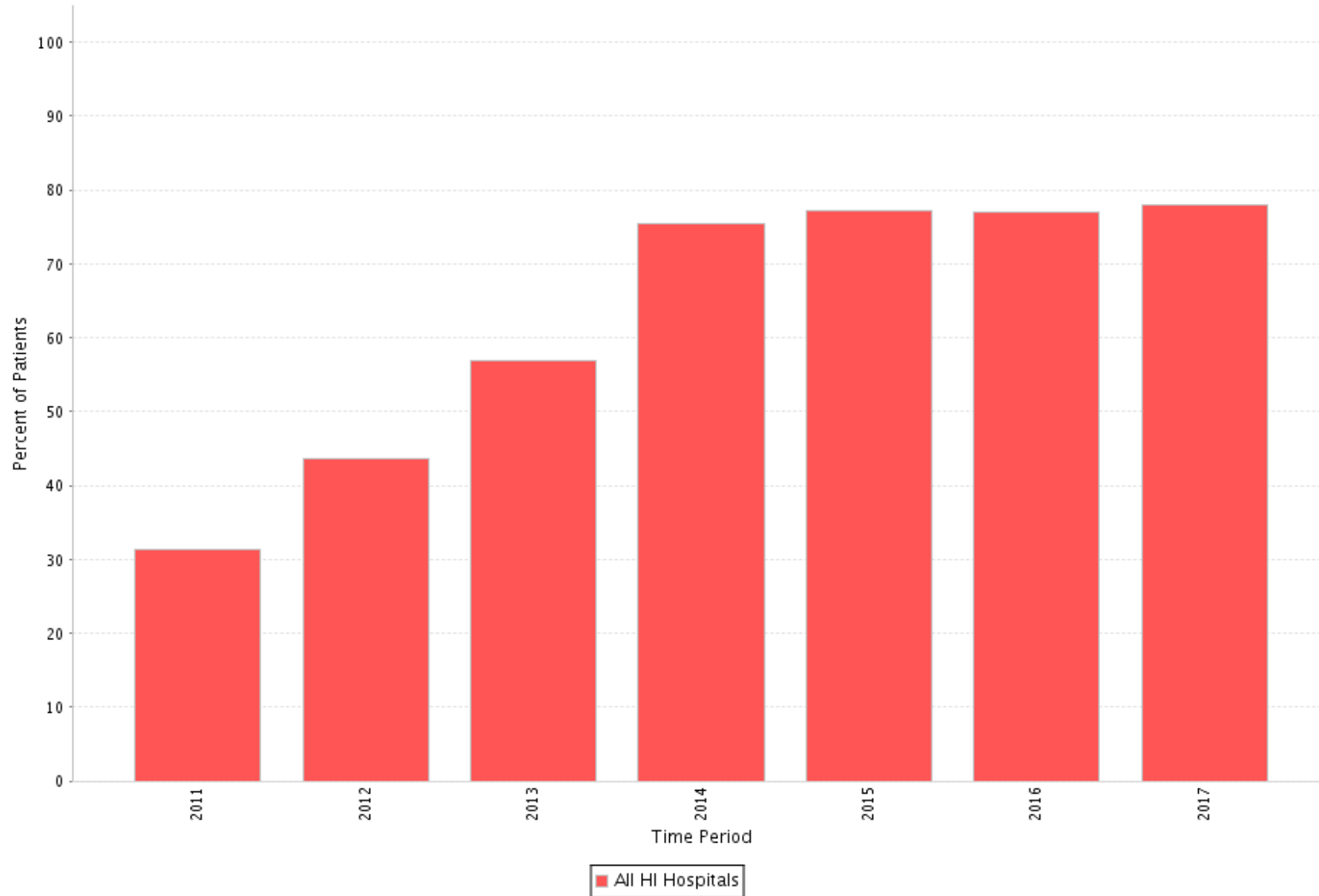
Total Calls	264		
Incomplete Calls	33	Triage calls	21
		Technical difficulties	12
Completed Calls	231	Molokai General Hospital (MGH)	7
		Wahiawa General Hospital (WGH)	12
		Hilo Medical Center (HMC)	27
		The Queen's Medical Center West Oahu (QMC-W)	119
		Kona Community Hospital (KCH)	21
		Maui Memorial Medical Center (MMMC)	1
		North Hawaii Community Hospital (NHCH)	14
		The Queen's Medical Center Punchbowl	29
		Kahuku Medical center	1
# IV tPA Administrations	102	# Transferred to QMC Punchbowl	68
		# Not transferred-remained at site or transferred to another institution	34
Total Transfers to QMC Punchbowl	91	Non tPA Transfers	23

Thrombolytic Therapies Note: Time periods/Categories at the end of the graph and data table have been omitted because there were no patient records during that time.									
Benchmark Group	Time Period	IV tPA initiated at this hospital for ED patients	IV tPA initiated at this hospital for Inpatients	IV tPA initiated at outside hospital and not initiated at this hospital	IA catheter-based reperfusion at this hospital for ED patients	IA catheter-based reperfusion at this hospital for Inpatients	IA catheter-based reperfusion at outside hospital	Any thrombolytic therapy	Total
All HI Hospitals	2011	105 (5.9%)	3 (0.2%)	18 (1%)	15 (0.8%)	0 (0%)	0 (0%)	131 (7.4%)	1781
	2012	136 (8.1%)	6 (0.4%)	10 (0.6%)	17 (1%)	1 (0.1%)	2 (0.1%)	157 (9.3%)	1686
	2013	118 (7.5%)	4 (0.3%)	23 (1.5%)	12 (0.8%)	1 (0.1%)	1 (0.1%)	155 (9.9%)	1572
	2014	154 (8%)	12 (0.6%)	32 (1.7%)	11 (0.6%)	2 (0.1%)	1 (0.1%)	201 (10.4%)	1927
	2015	180 (8.7%)	11 (0.5%)	59 (2.9%)	49 (2.4%)	5 (0.2%)	1 (0%)	270 (13.1%)	2061
	2016	227 (10.9%)	16 (0.8%)	63 (3%)	52 (2.5%)	3 (0.1%)	1 (0%)	324 (15.5%)	2086
	2017	224 (10.7%)	11 (0.5%)	77 (3.7%)	42 (2%)	4 (0.2%)	0 (0%)	328 (15.7%)	2091

Date of report: 01/29/2018 17:04:54 GMT-10:00 run by User: Matthew Koenig (mkoenig) at Site: Queen's Medical Center (14542) in Stroke PM
 Please note: GWTG aggregate comparative data is intended for internal quality improvement. Permission is required from the American Heart A

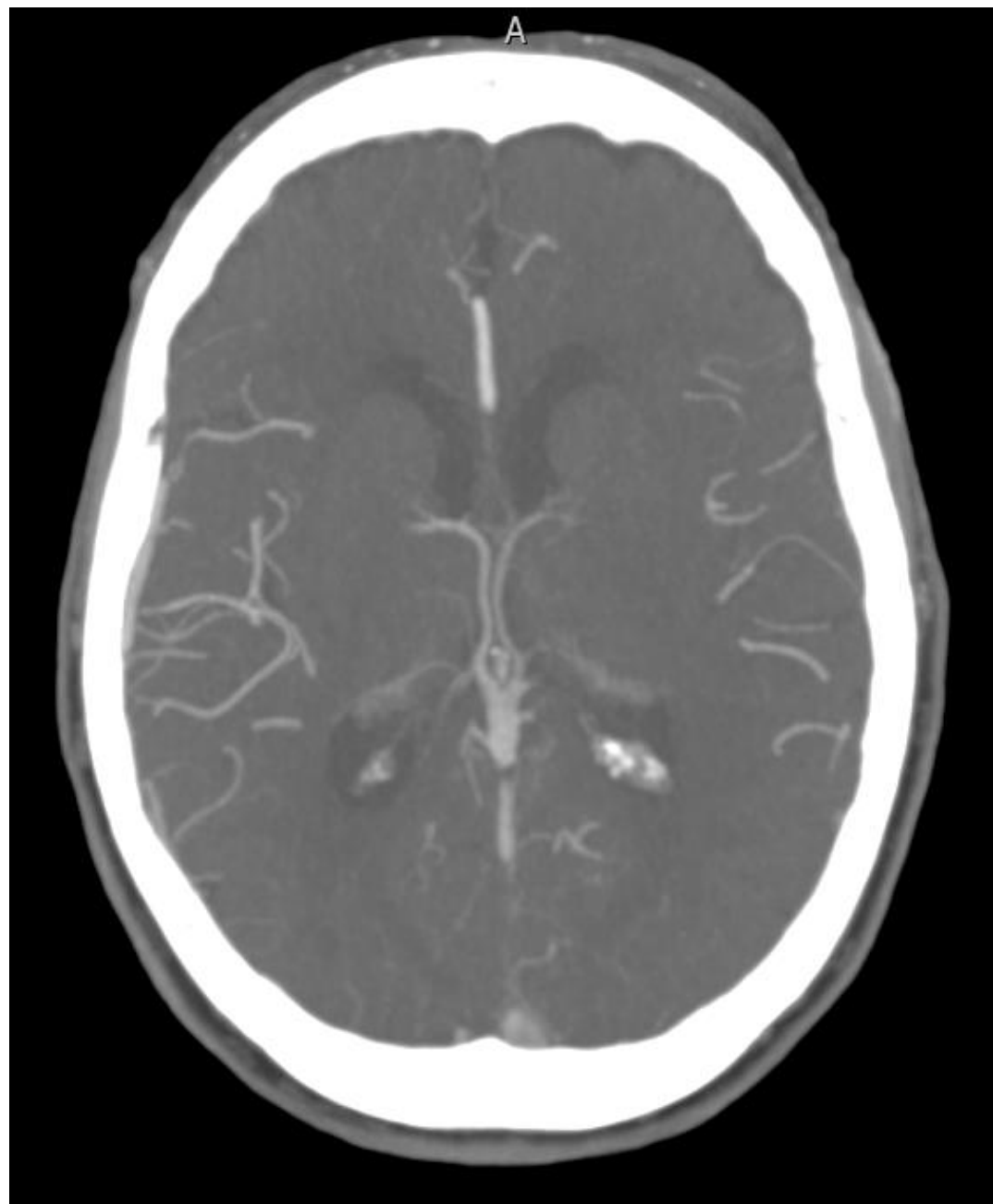
Time to Intravenous Thrombolytic Therapy - 60 min

Percent of acute ischemic stroke patients receiving intravenous tissue plasminogen activator (tPA) therapy during the hospital stay who have a time from hospital arrival to initial
Time Period: 01/2011 - 12/2017; Site: Queen's Medical Center (14542)

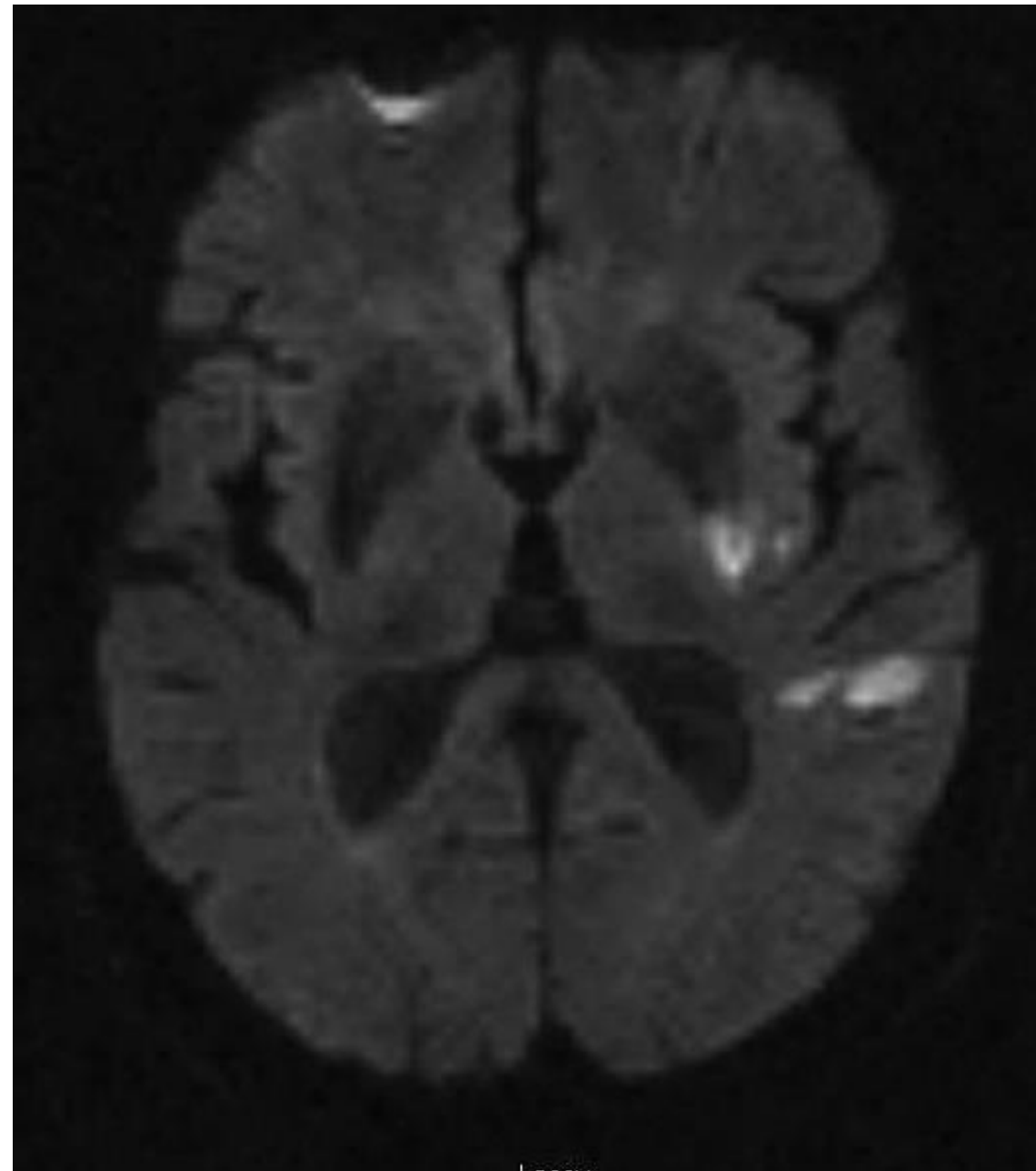


Kona Left MCA Occlusion

- Last known normal 11:30 AM
 - Telestroke activation 1:00 PM
 - tPA bolus 1:30 PM
 - Arrival at QMC 6:30 PM
-
- Transit time: 5:00
 - Total ischemia time prior to arrival: 7:00

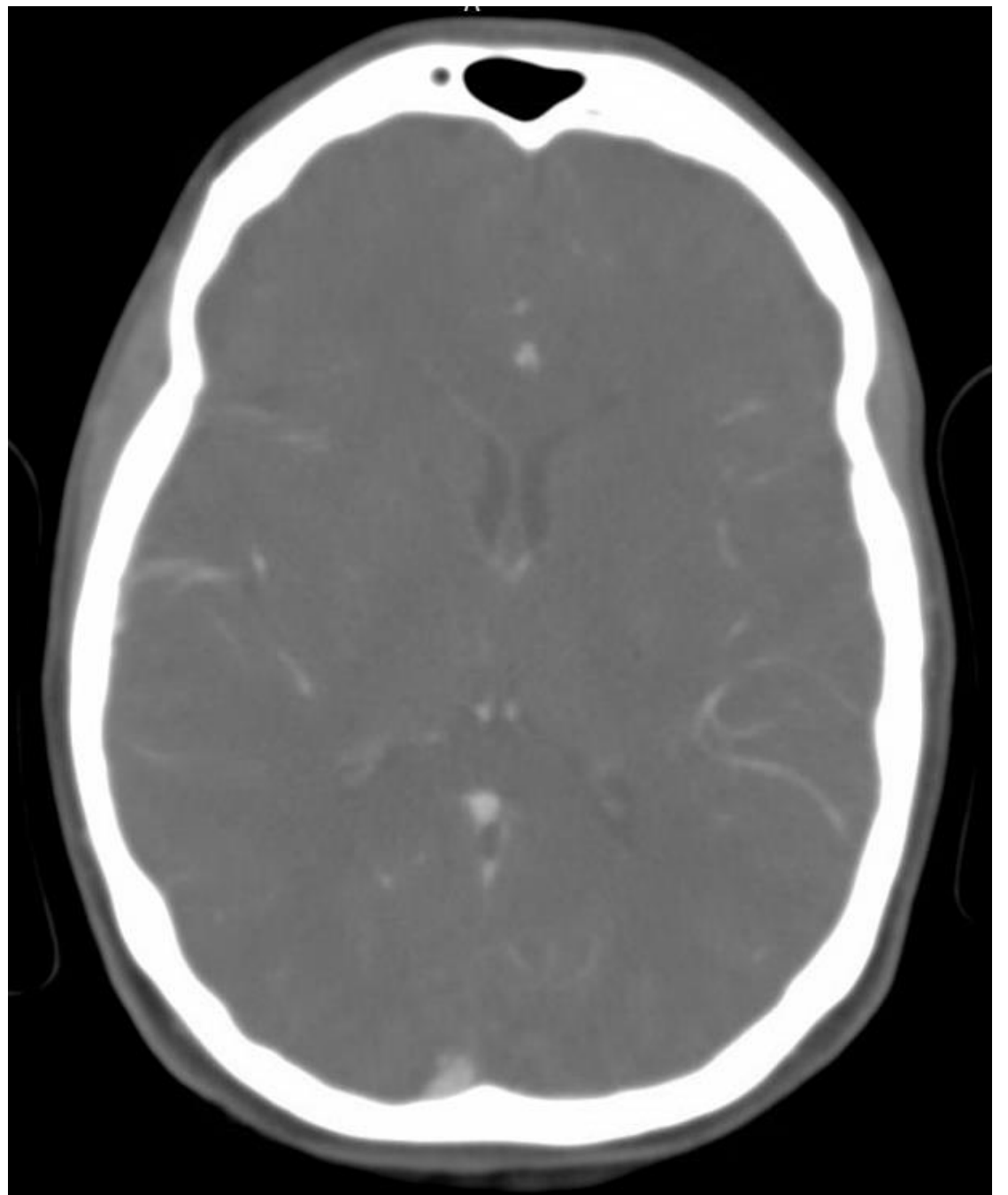
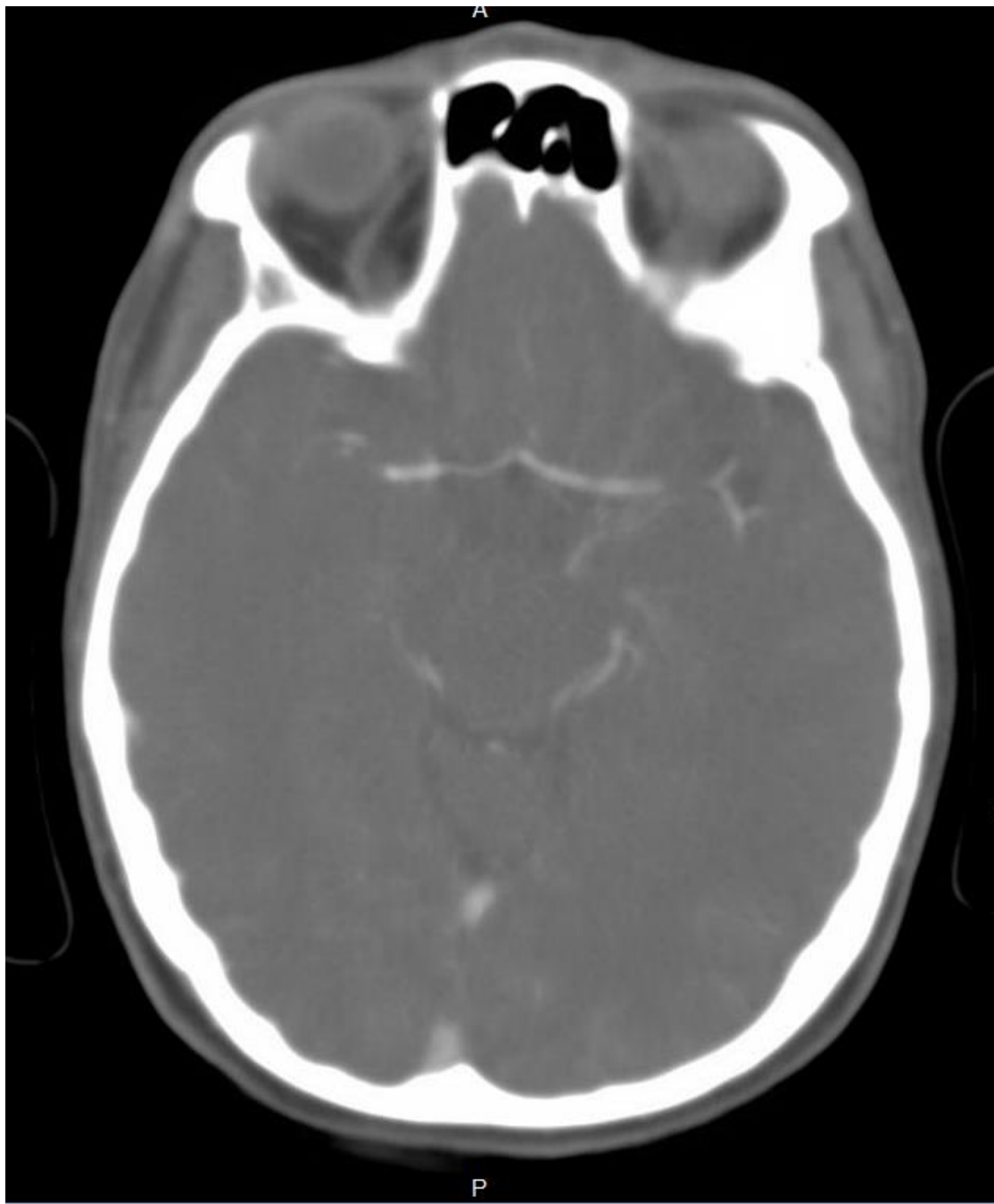


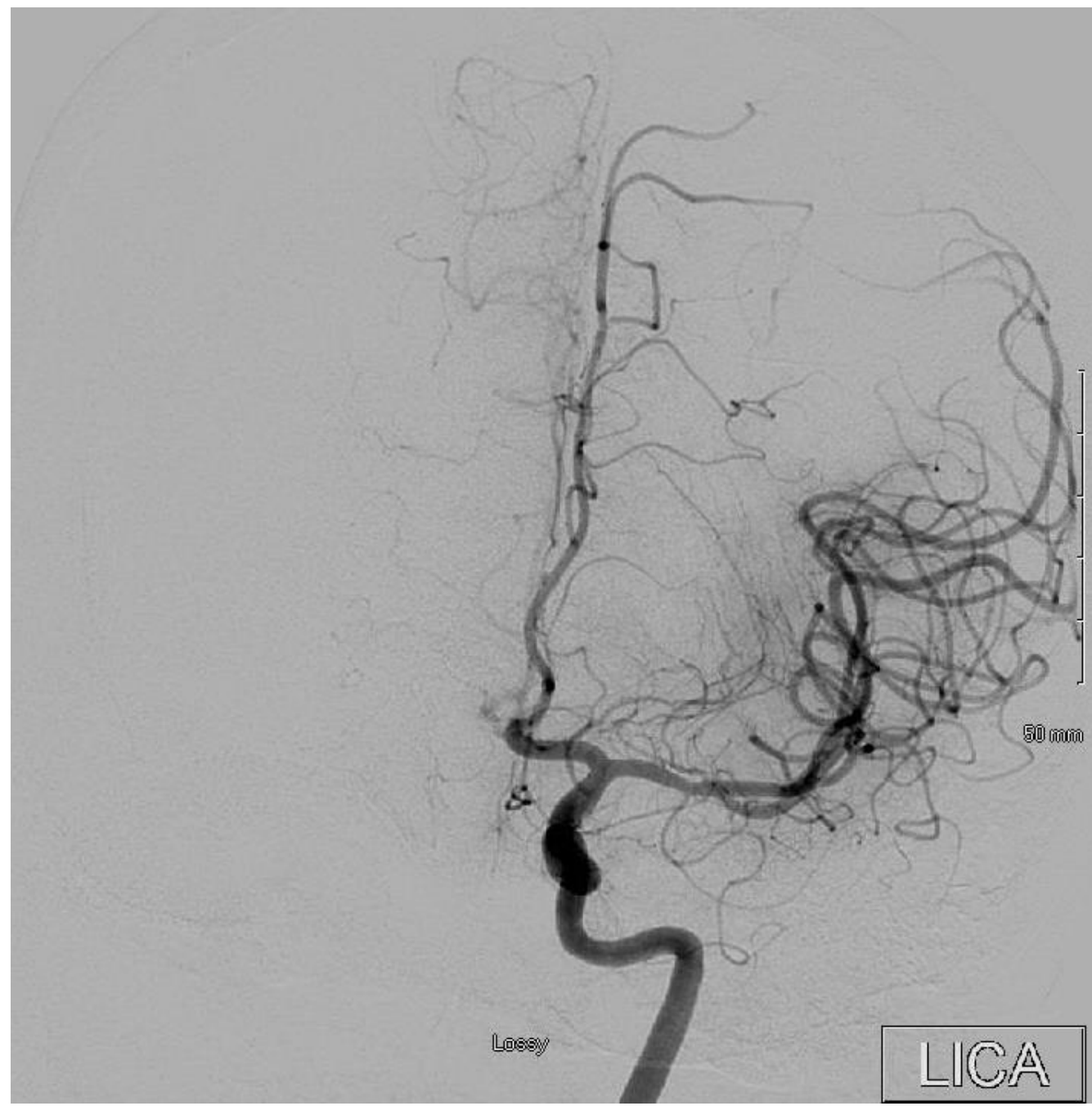


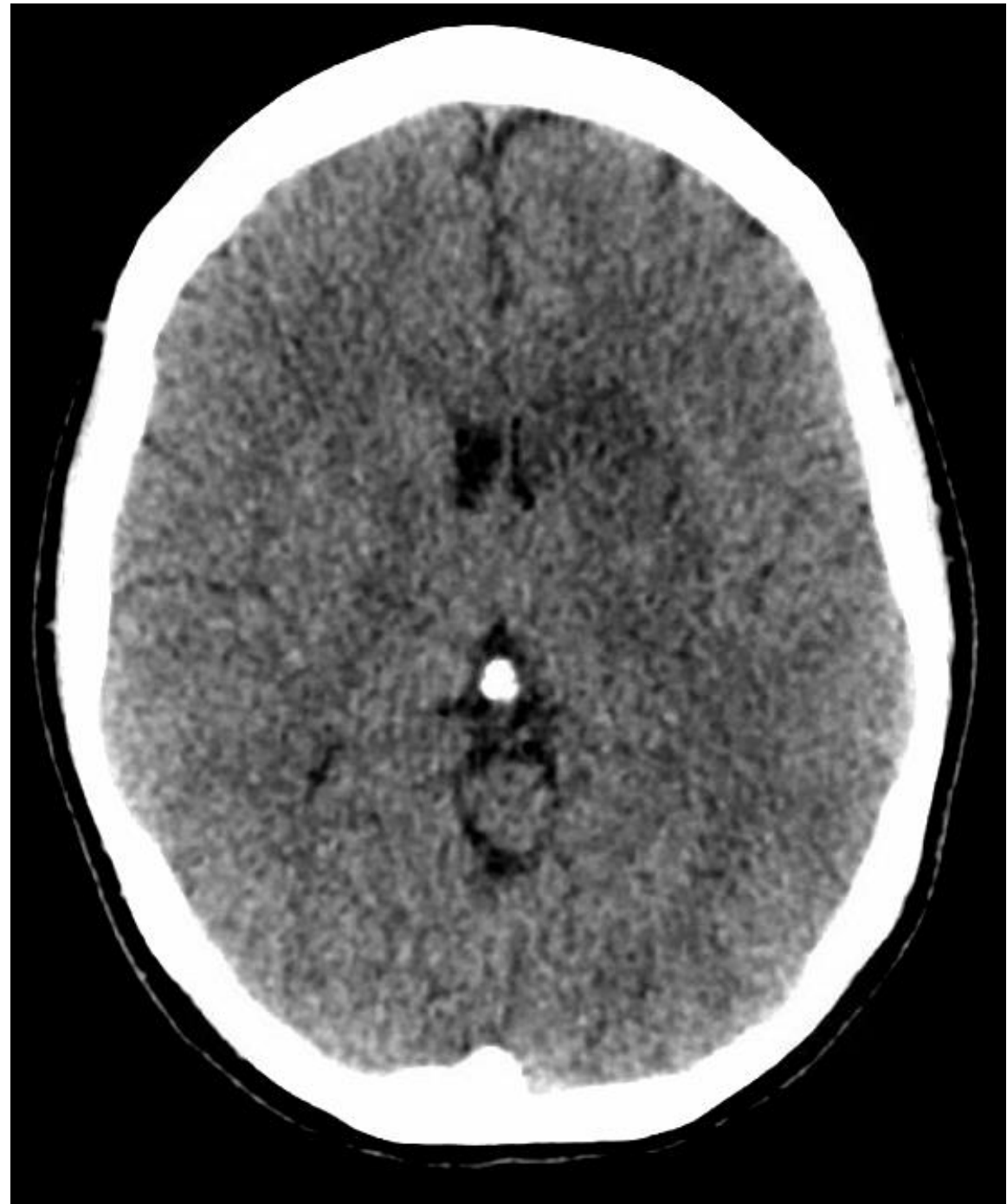


North Hawaii Left MCA Occlusion

- 41 year old woman
 - Witnessed onset 8:30 AM
 - Telestroke activation 11:15 AM
 - tPA bolus 11:30 AM
 - QMC arrival 2:45 PM
 - Angio start 3:10 PM
 - Recanalization 3:25 PM
-
- Transit time: 3:15
 - Total ischemia time: 6:55







Telestroke Grant Support



State of Hawaii, Department of Health
Neurotrauma Supports

Home About DOH ▾ Neighbor Island Offices ▾ News ▾ Employment

*NEUROTRAUMA HOME



OUR MISSION

To develop, implement, and monitor a comprehensive system of statewide supports to address the needs of people with neurotrauma injury and their families.

We provide leadership through community partnerships to promote neurotrauma injury prevention programs, education and public awareness.



LIVING WITH NEUROTRAUMA

In Hawai'i, neurotrauma injury is seen as a severe and chronic disability of a person that is attributable to an injury to the central nervous system, such as traumatic brain injury (TBI), spinal cord injury or stroke, and is likely to continue indefinitely.



RESOURCES

We are **Neurotrauma Supports** of the State of Hawai'i Department of Health's Developmental Disabilities Division.

[Spinal Cord Injury – Hospital Discharge Packet 15MB pdf](#)

[Neurotrauma Supports Strategic Plan 2018-2020](#)

[What is Traumatic Brain Injury?](#)

Telestroke Grant and Equipment

- Grant support from Hawaii DOH Neurotrauma Special Fund
 - 2011-2015: \$484,000
 - 2016-2019: \$474,000
 - Grant ends June 1, 2019
- Grant support funded telemedicine equipment, ongoing technical support, bandwidth rentals, public education, travel expenses for site visits and provider education (no salary or FTE support).
- The grant included a sustainability plan with subscription-based business model after public support ended.

	Year 1	Year 2	Year 3	Total
Technical Support	\$ 80,760.00	\$ 80,760.00	\$ 80,760.00	\$242,280.00
Broad Band Costs	30,000.00	30,000.00	30,000.00	90,000.00
Provider Training	4,800.00	4,800.00	4,800.00	14,400.00
Public Education	20,000.00	20,000.00	20,000.00	60,000.00
Telemedicine Equipment Installation and Upgrades	31,700.00	-	-	31,700.00
HHIC Data Collection and Analysis	12,000.00	12,000.00	12,000.00	36,000.00
Total:	\$ 179,260.00	\$ 147,560.00	\$ 147,560.00	\$474,380.00

Current Vendor: Interactive Care Technologies



HAWAII STROKE NETWORK

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TIME IS BRAIN...MANAGING ACUTE STROKE WITH TELEMEDICINE

Within three minutes of a phone call from an emergency department on a neighbor island or on Oahu, a Hawaii Stroke Network specialist can examine the acute stroke patient and CT scan through a novel web-based video consultation service provided by Interactive Care Technologies. The Hawaii Stroke Network is a telemedicine network of seven hospitals throughout Hawaii funded by the Hawaii Department of Health in partnership with the Queen's Medical Center to improve acute stroke care for the people of Hawaii. When the patient develops an acute stroke from a blood clot in the brain, there is a precious three hour window in which to give a clot busting treatment called thrombolysis. Because many patients wait before coming to the emergency department, emergency physicians have very little time to examine the patient, obtain a brain CT scan, and decide whether to treat with thrombolysis. And the decision is often tricky...Is it really a stroke?...Is the stroke big enough?...Could thrombolysis be too dangerous for this this patient?...Can thrombolysis be started early enough? Because the Hawaii Stroke Network specialists manage more acute strokes than any group in Hawaii, they can offer the most expert assistance to emergency departments within minutes using iCare Tech's wireless mobile telemedicine system. Quick action by emergency physicians, partnering with the Hawaii Stroke Network consultants, will save lives and improve quality of life of acute stroke victims.

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Limitations of Current Technology

- Two-way video only, audio requires telephone call
- Dedicated wireless nodes so the cart cannot roam out of the ER
- Dedicated bandwidth rental (higher cost)
- Completely different technology compared to the QHS hospitals telestroke equipment
- Relatively low resolution and frame rate
- No smart phone access

New Vendor: IronBow Healthcare Solutions

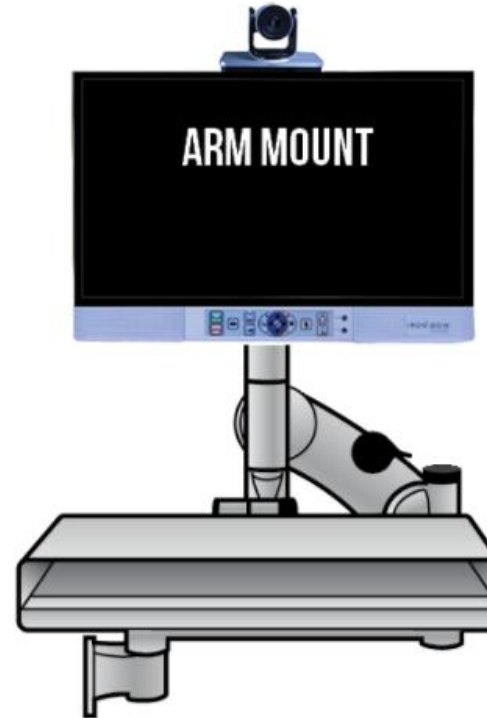


CLINiC-C-8X-A01

Precision 40
8X PTZ Camera
(hardware based codec)



Designed for deployment in Cisco based video environments. Ideal telehealth use cases include: stroke, behavioral, ICU, patient bedside or anywhere a strong pan/tilt/zoom camera is required. (~ 29.2 lbs)



Features

- Use hospital wireless network so should be able to roam throughout the hospital (cost savings)
- Uses Queen's existing network infrastructure (cost savings)
- Same technology as QHS telestroke equipment currently deployed at Molokai, QMC West, North Hawaii, and QMC Punchbowl
- Service contract includes 24/7 technical support and proactive device monitoring
- Synchronous two-way audio-visual
- Higher resolution and frame rate
- Accessible from smart phone application

6.1.1 Base Cart with 3 years support

Telestroke Cart Option Description	QTY	Cost	Total Cost
Base Cart W/ Iron Care 3yr	4	\$27,458.73	\$109,834.92
Base Cart W/ Iron Care, On Site Support 3yr	4	\$33,661.03	\$134,644.12
Base Cart W/ Iron Care, On Site Support, Sliver Service 3yr	4	\$39,312.34	\$157,249.36

6.1.2 Base Cart with 3 years support lease option

Telestroke Cart Option Description	Cost	Lease Monthly Cost
Base Cart W/ Iron Care 3yr with 3yr lease	\$27,458.73	\$841.61
Base Cart W/ Iron Care, On Site Support 3yr with 3yr lease	\$33,661.03	\$1,031.71
Base Cart W/ Iron Care, On Site Support, Sliver Service 3yr with 3yr lease	\$39,312.34	\$1,204.92

6.1.3 Base Cart with 5 years support

Telestroke Cart Option Description		Cost	Total Cost
Base Cart W/ Iron Care 5yr	4	\$32,168.68	\$128,674.72
Base Cart W/ Iron Care, On Site Support 5yr	4	\$42,505.85	\$170,023.40
Base Cart W/ Iron Care, On Site Support, Silver Service 5yr	4	\$51,924.70	\$207,698.80

6.1.4 Base Cart with 5 years support lease option

Telestroke Cart Option Description	Cost	Lease Monthly Cost
Base Cart W/ Iron Care 5yr with 5 yr lease	\$32,168.68	\$627.29
Base Cart W/ Iron Care, On Site Support 5yr with 5 yr lease	\$42,505.85	\$828.86
Base Cart W/ Iron Care, On Site Support, Silver Service 5yr with 5yr lease	\$51,924.70	\$1,012.53

6.1.5 5 years cart support via 60 monthly payments

Telestroke Cart Option Description	Cost	Support Monthly Cost
Base Cart Iron Care, On Site Support, Sliver Service 5yr 60 mnth payments	\$31,176.96	\$519.62

Cart purchase price (without support): \$20,747.74

Annual support cost: \$6,235.44



Pacific Disabilities Center – February 2018

The Hawaii Neurotrauma Registry Project

March 21, 2013 - Present

Boldly going where no registry
has gone before (as far as we know)

Three main goals of the Hawaii Neurotrauma Registry Project

1. Recruit Hawaii residents on all islands and of all ages with neurotrauma injuries to take a voluntary survey on their injuries and post-injury circumstances (the "Registry")
2. Provide education to the general public and professionals on all islands about neurotrauma injuries and the Registry
3. Offer an Information and Referral service to Hawaii residents with neurotrauma injuries and their family members, caregivers, and other supports

Purpose of the Registry

- Information gathered from Registry surveys assists the Department of Health in identifying the community supports and services needed by neurotrauma injury survivors, helps to educate service providers, and helps to develop safety and prevention plans and policies

Best Practices Research, 2014 - 2015

1. Conducted online search for national and state neurotrauma registries and surveillance
 - Most were mandatory surveillance programs
2. Surveyed 50 states, District of Columbia, 6 US territories: 35 responses
 - Registries / surveillance: 18 brain injury, 5 stroke, 11 spinal cord injury
 - Information came from medical records, death certificates, interviews, hospital forms, emergency medical services records, and other sources
 - Data collected were used to apply for grants, for legislative purposes, public education, referrals, and case management
 - Four states conduct interviews (one does multiple interviews over the years), and six provide case management
 - Based on information received, Hawaii appears to have the only project that focuses on the post-neurotrauma injury needs of survivors

Media and Marketing Efforts^a

March 21, 2013 – January 30, 2018

Print	Number
Print Ads / Print Articles	10 / 20
Televised	
‘Olelo or other television programs	4
Webinars	1
Televised public service announcements (PSAs)	2
Radio	
Radio programs / Radio public service announcements (PSAs)	4 / 1,442
Social Media	
HNTR electronic newsletter / Number of Subscribers	10 / 470
Facebook and Twitter Posts	140
Facebook and Twitter Friends and Following	63
YouTube Hits (includes televised and radio programs, PSAs, and webinar)	595

^aAlso brochures (general, parent/child focus, military focus), HNTR website, and blog entries

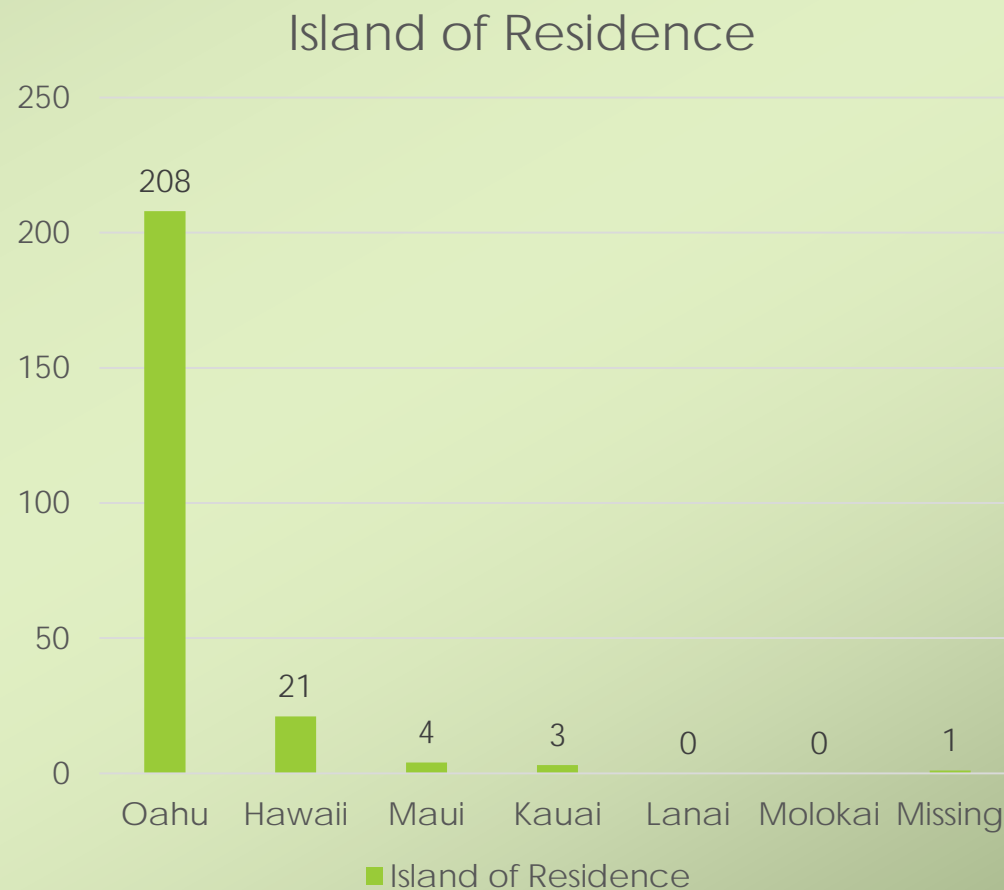
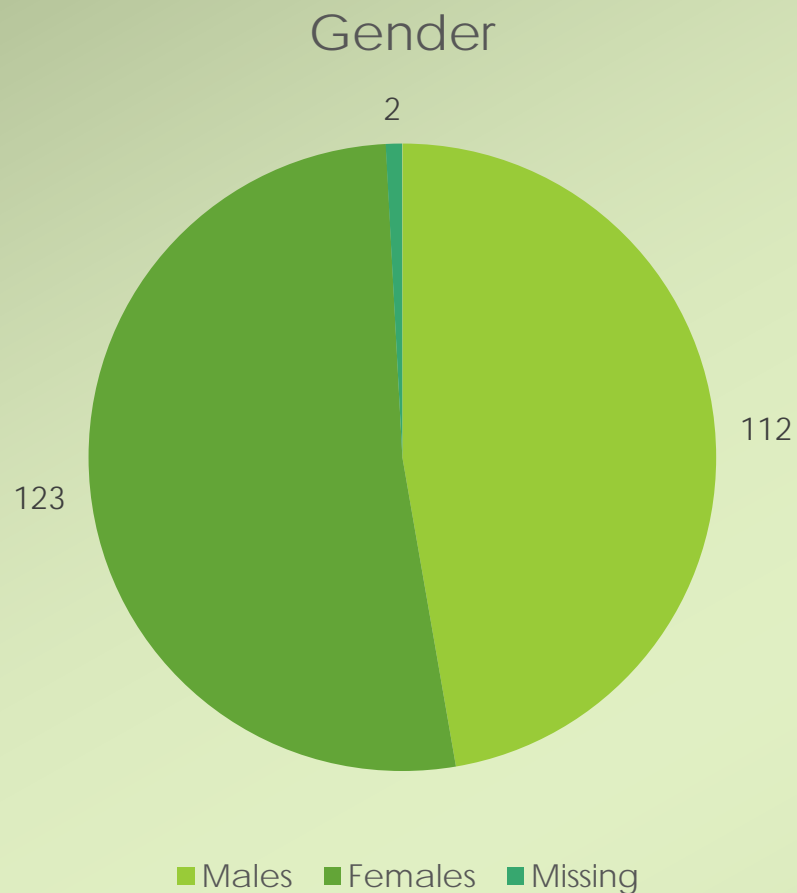
Registry Participation

March 21, 2013 – January 30, 2018

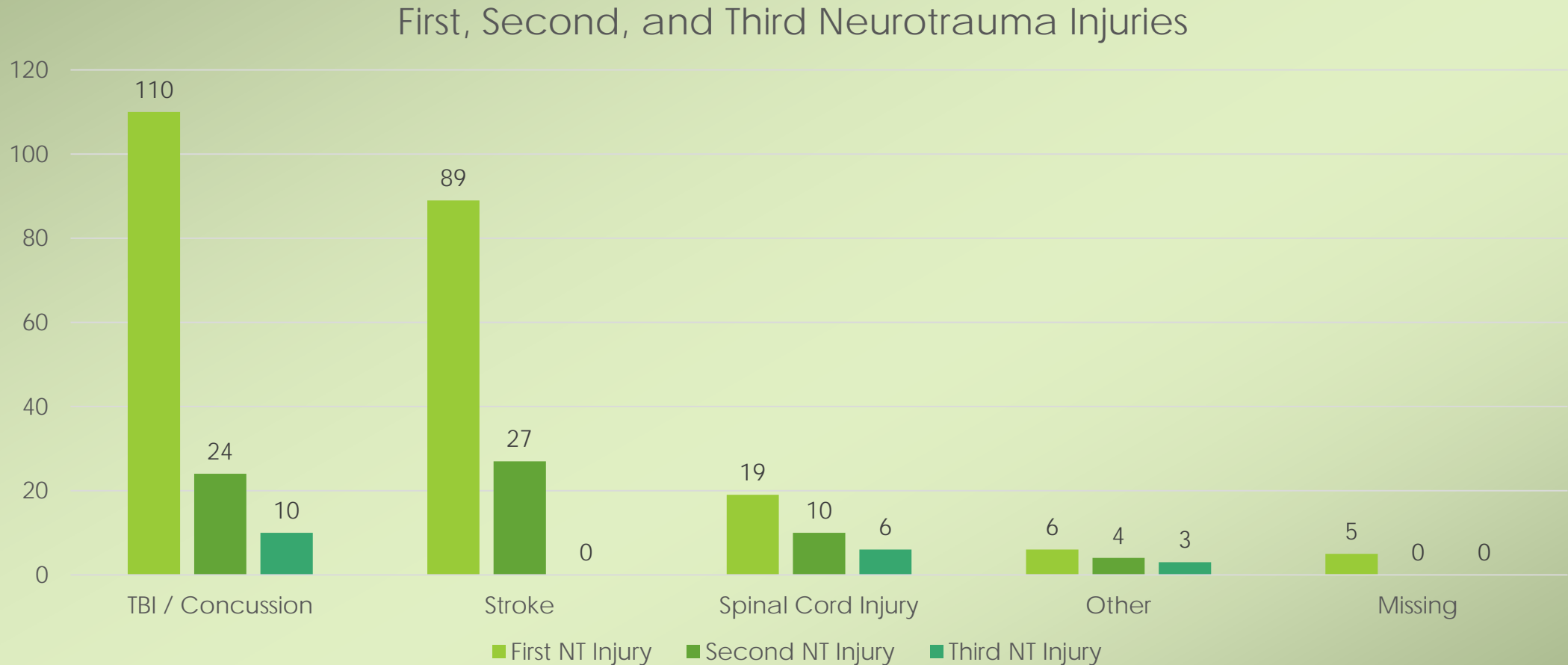
Time Period (in 12 – month increments)	Number of Persons Who Took Survey
1. March 21, 2013 – March 20, 2014	40
2. March 21, 2014 – March 20, 2015	57
3. March 21, 2015 – March 20, 2016	43
4. March 21, 2016 – March 20, 2017	54
5. March 21, 2017 – January 30, 2018	43
Total	237

Information about Registry Participants

(N=237)

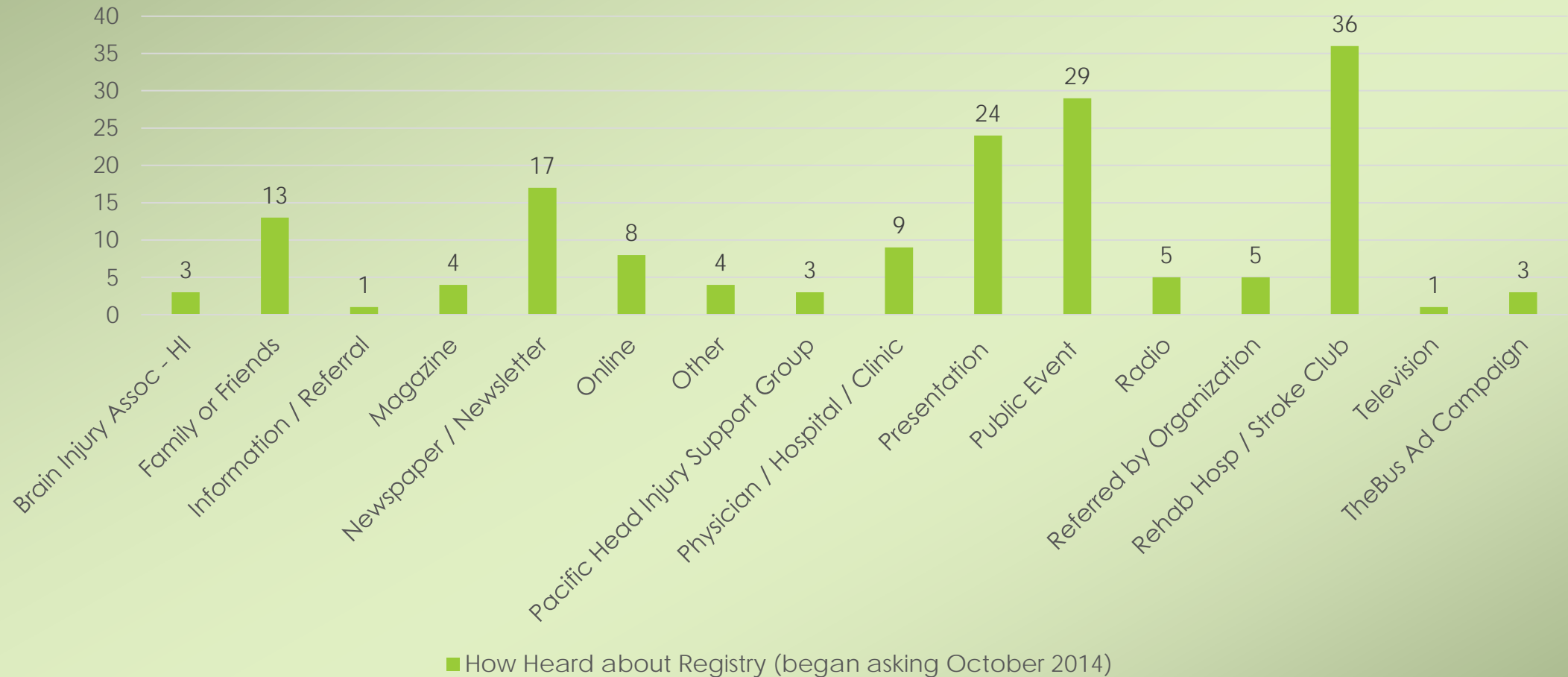


Information about Registry Participants (N=237)



How did you hear about the Registry?

(N=237)



Education about Neurotrauma Injuries

March 21, 2013 – January 30, 2018

Events – All Islands	Number
Public events attended by HNTR staff and volunteers	109
Individuals who visited HNTR tables at public events	16,814
Presentations – All Islands	Number
Presentations to professionals / community members	67
Professionals / community members who attended HNTR presentations	1,510

Neighbor Islands: HNTR staff gave one presentation on Lanai, distributed HNTR information on Molokai, gave one presentation on Maui, two presentations on Hawaii Island, and took part in multiple public events on Hawaii Island, Kauai, and Maui.

Information and Referral Services

March 21, 2013 – January 18, 2018

Item	Number
Information and referral contacts with individuals (duplicate count)	464
Items of information and number of referrals provided	1,747

1. HNTR is working on contacting all those who ask for information and referral assistance within 7 days of receiving a request
2. Six months after initial contact, HNTR staff re-contact individuals to see how they are doing, how they fared with the information and referrals provided, and if they require additional assistance

Key Findings from Registry Survey

March 21, 2013 – March 20, 2017, N=194

Highest Endorsed Problems

- Forgetfulness=126
- Tiredness=113
- Balance=110
- Body Pain=100
- Concentration=100
- Slow reactions=94
- Irritability=86
- Vision=85
- All others=84 or fewer

Current Needs and Functioning

- Information=68
- Financial Assistance=67
- Social Activities=62
- Chore Assistance=60
- Personal Assistant Services=48
- Medical Assistance=43
- Transportation=42
- Companionship=40
- All others=38 or fewer

In addition to public education and information and referrals services, HNTR has contributed in other ways. . .



HNTR Project Contributions

- Around the state, we discovered there is a desire for more support groups. We have conveyed this information to professionals.
- Since then, a new stroke support group has started in Hilo. Another support group for all neurotrauma injuries may start in Waimea (Hawaii Island).

HNTR Project Contributions

- We realized a resource manual focusing on neurotrauma injuries was needed. We decided to create one, even though it is not required in our contract. The manual is in process.
- As noted earlier in this presentation, the need that was most endorsed on the Registry survey was for information.

HNTR Project Contributions

- Information from Registry survey participants indicate that balance is an issue for many of them.
- Neurotrauma Special Fund monies are paying for a state-wide training entitled, "A Matter of Balance."

HNTR Project Contributions

- Findings from the Registry survey were used to inform the Neurotrauma Supports Strategic Plan for 2017 – 2020.
- We researched definitions of “cognitive rehabilitation” and what coverage other states require for brain injuries. We helped to come up with a definition of cognitive rehabilitation for a bill proposed in Hawaii.

HNTR Project Contributions

- In 2015, we presented at two conferences:
 - 39th Brain Injury Rehabilitation Conference (Williamsburg, VA)
 - 31st Annual Pacific Rim International Conference on Disability and Diversity (Honolulu, HI)
- In Virginia, we visited with personnel from the Virginia Department on Aging and Rehabilitative Services Brain Injury Service Coordination Unit, and toured a community brain injury services clubhouse.

HNTR Project Contributions

- In April 2018, we will present “Domestic Violence, Concussions, and Brain Injuries” at the Institute for Violence, Abuse and Trauma Hawaii Summit (IVAT).
- The President and Founder of IVAT has expressed an interest in having HNTR write a manuscript on this topic for a special edition of one of the journals he edits.

Going Forward – Challenges and Strategies

- Challenges
 - More survey participation is needed from children, youth, and young adults, and from Neighbor Islands, to ensure proper representation
- Strategies
 - We discovered that the personal touch is better at increasing survey participation than media and marketing. As a result, we are working on increasing the number of presentations we do
 - Working on establishing more partnerships with organizations who can provide referrals across the state
 - We shortened the survey; it now takes about 12 minutes to complete
 - Parents / legal guardians can leave out the name of their child or guardian as long as we have the adult's name contact information

Mahalo. . .

- . . .Neurotrauma Advisory Board (NTAB) and State Traumatic Brain Injury Advisory Board (STBIAB) board members for their support and suggestions
- . . .HNTR volunteers for the many hours of work they have donated
- . . .Rehabilitation Hospital of the Pacific and The Queen's Medical Center for their collaborative efforts
- . . .State of Hawaii, Department of Health, Neurotrauma Supports staff
- Every neurotrauma injury survivor in Hawaii who has taken the survey
- All others who have facilitated our efforts to fulfill the goals of The Hawaii Neurotrauma Registry Project



UNIVERSITY
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MĀNOA

John A. Burns School of Medicine
Pacific Disabilities Center

**Hawai'i Neurotrauma Registry Project (HNTR) Report
for Joint Advisory Board Meeting
February 1, 2018, 10:30 am — 3:00 pm**

Report Outline

1. Registry Recruitment
2. Community Education – Presentations and Events
3. Information and Referrals
4. Media and Marketing
5. Miscellaneous

The three main goals of the Hawaii Neurotrauma Registry Project are:

1. Recruit Hawaii residents on all islands and of all ages with neurotrauma injuries to take a voluntary survey (known as the “Registry”) on their injuries and post-injury circumstances
2. Provide education to the general public and professionals on all islands about neurotrauma injuries and the Registry
3. Offer an Information and Referral service to Hawaii residents with neurotrauma injuries and their family members, caregivers, and other supports

Information gathered from the surveys assists the Department of Health in identifying the community supports and services needed by neurotrauma injury survivors, helps to educate service providers, and helps to develop safety and prevention plans and policies.

Registry Recruitment

Year	Time Period	Number of Unique Persons
1	March 21, 2013 – March 20, 2014	40
2	March 21, 2014 – March 20, 2015	57
3	March 21, 2015 – March 20, 2016	43
4	March 21, 2016 – March 20, 2017	54
5	March 21, 2017 – January 31, 2018	44
	Total	238

1. Registry Surveys

One person took the survey in December 2017. Twelve completed the survey in January 2018, which is higher than the monthly average. Seven were from people who received Information and Referral assistance who chose to take the survey.

2. Changes to Survey

- a. The year “2018” was added as an option for the year that a survivor’s neurotrauma injury occurred.
- b. In order to remove the barrier of parent or guardian concern about their children’s names being entered into the survey, HNTR now offers the option of leaving out the name of the child, as long as we have the name and contact information of the parent or legal guardian. The child’s name is entered as Anonymous. This was implemented in December 2017 and already appears to have had a positive effect.

3. Data Cleaning and Statistical Report

Statistics for Years 1 – 4 have been rerun, and the data re-entered as needed. The report is being edited, and will be available soon.

Community Education – Events and Presentations

Completed Presentations (December 2017 – January 2018):

1. Presentation to 1984th Unit of the Army – Oahu – January 7, 2018
 - a. Presentation was attended by 147 persons
 - b. Audience included physicians, nurses, social workers, and other professionals

Future Presentations:

1. Presentation on “Domestic Violence, Concussion, and Traumatic Brain Injury” – Oahu – April 18, 2018
 - a. To be presented at the Institute on Violence, Abuse & Trauma’s 15th Hawaii International Summit – “Preventing, Assessing & Treating Trauma Across the Lifespan”

Completed Events (December 2017 – January 2018):

1. No events for December 2017 or January 2018.

Future Events:

1. No future events scheduled yet.

In process:

1. HNTR and DOH representatives met with Ms. Lauren Rachal, Director of the Oahu Heart and Stroke Walk. Group members discussed HNTR’s possible participation in the Oahu, Hilo, and Maui Heart and Stroke Walks in 2018 and other ways in which the organizations could work together.
2. An HNTR staff member met with Ms. Michelle Cordero-Lee, CEO of Hawaii Meals on Wheels (Manoa), regarding presenting to their volunteers in May, June, or July.

Item	Total through November 2017	December 2017	January 2018	Grand Total
Public Education				
Events attended by HNTR staff and volunteers	109	0	0	109
Number of individuals who visited HNTR tables at public events	16814	0	0	16814
Number of brochures / informational packets distributed	16521	0	0	16521
Number of volunteers assisting with public events (duplicated count)	117	0	0	117
Presentations and Networking				
Presentations about HNTR to professionals / community	67	0	1	68
Number of professionals / community members / who attended HNTR presentations or information distributed	1510	0	147	1657
Number of portfolios distributed (effective July 2017)	180	0	0	180
Networking contacts made with partners / collaborators	272	0	2	274
Events / presentations in conjunction with partners / collaborators	50	0	0	50

Information and Referrals

Month	Total Number of I&R Contacts	Number of I&R Contacts Completed	Pieces of Information Given	How many answered the short survey questions?	People who got I&R this month who completed the long survey	How many were contacted but declined I&R?	Number of Unreachable I&R Contacts
January 2018	7	7	95	7	0	0	5
December 2017	7	7	78	1	0	0	0
November 2017	15	15	183	3	0	0	0
October 2017	18	14	171	3	0	0	0
September 2017	15	9	72	8	0	3	2
August 2017	26	5	66	7 (rev)	0	0	10
July 2017	16	3	33	2	2	4	9
June 2017	32	14	102	1	3	2	16
May 2017	10	6	56	N/A	2	0	4
April 2017	23	8	24	N/A	0	3	12
March 2017	12	9	76	N/A	1	0	3

Discharge Binders

We have asked for copies of Rehabilitation Hospital's discharge binders. When conducting Information and Referral with former Rehabilitation Hospital patients, we will remind them of the binder. If the patient has the binder available during the call, the HNTR staff member can go over together with the patient the items in the binder that relate to their needs. HNTR staff members try and reach all referrals within seven days of receiving names and contact information.

Agreement with The Queen's Medical Center

An agreement has been reached with The Queen's Medical Center. If persons with neurotrauma injuries who were treated at Queen's are interested in receiving Information and Referral Services, and they give consent, Queen's will provide HNTR with their names and contact information. HNTR recently received the first referral from Queen's. As always, all referral names, contact and other information are kept

confidential. As with referrals from Rehabilitation Hospital, HNTR staff try and reach Queen's former patients within seven days of receiving their names and contact information.

Six-Month Follow-up Calls

HNTR is starting a follow-up process with those who received Information and Referral Services. Staff members call again six months after the initial phone call to see how individuals are doing, how they fared with the resource information that was previously provided, and if they need additional information.

Media and Marketing

As of January 31, 2018, HNTR has 59 people who are Facebook Friends or Twitter Followers.

YouTube viewing stats (totals and number of views in January 2018):

- Battlefield to Ball Field (TV) – 115 views (+5 in January)
- The Gary Galiher Law Hour (Radio) – 113 views (+2 in January)
- HNTR Interview with Rick Hamada (Radio) – 99 views (+1 in January)
- HNTR on Traumatic Brain Injury (TV) – 83 views (+1 in January)
- Joy in our Town (TV) – 60 views (+1 in January)
- What is stroke? (Webinar) – 49 views (+3 in January)
- HNTR on Stroke (TV) – 40 views (no change)
- HNTR Interview on KSSK with Perry & Price (Radio) – 28 views (no change)
- Conquering Concussions (PSA) – 22 views (+1 in January)
- HNTR Interview with Percy Ihara / Generations (Radio) – station lost the program

Total views = 609, up from 595 at the end of December 2017.

Item	Total through October 2017	December 2017	January 2018	Grand Total
Media				
Print articles	10	0	0	10
Print ads	20	0	0	20
Number of HNTR newsletters (quarterly, effective October 29, 2014)/e-Cards	10	0	0	10
HNTR newsletter distribution (number of subscribers)	469	1	0	470
Radio PSAs/Interviews	1446	0	0	1446
TV PSAs (including webinars, in post-production status)	3	0	0	3
TV programs, appearances, or ads (duplicated count/broadcast)	74	0	0	74
Social media following ¹	59	2	-2	59
Facebook Posts (effective July 16, 2014)	88	3	0	92
Facebook Friends/Following (effective July 16, 2014)	55	4	-2	57
Twitter Posts (effective October 31, 2014)	48	0	1	49
Twitter Following (effective October 31, 2014)	4	0	0	4
YouTube Hits (effective February 23, 2015)	582	13	14	609

¹This is an unduplicated count. Some people are both Facebook Friends and Twitter Followers, but each individual is counted only once as a social media follower.

Miscellaneous

1. Contract for March 2018 – March 2019 is being processed by the Hawaii State Department of Health.
2. Survey and processes
 - a. Average time for short survey: 12-13 minutes, based on 35 entries through January 31, 2017, from various sources (HNTR staff, person with neurotrauma injury, family member, etc.)
3. Brain Injury Awareness Month (March 2018)
 - a. HNTR is working on securing the rights to show the movie “Concussion” during mid- to late-March 2018. It would be free and open to the public. We are also looking for a speaker to give a brief talk about brain injuries and lead a Q&A session.
4. New survey for providers – HNTR plans to survey providers to get another perspective on the needs of persons with neurotrauma injuries.
5. Brochure updates
 - a. Military brochure – updates complete
 - b. Regular brochure – currently being updated
 - c. Parent brochure – will be updated after regular brochure is finished
6. Resource Manual update
 - a. Online version for everyone
 - b. Internal use Excel file
 - c. Resources by type of neurotrauma injury
7. Hiring
 - a. Project Assistant position (full-time)

Report on Neurotrauma in Hawaii: TBI, Spinal Cord injury, and Stroke

Dan Galanis, Ph.D.

Epidemiologist

***Injury Prevention and Control Section
EMS & Injury Prevention System Branch
Hawaii Department of Health***

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E-mail: daniel.galanis@doh.hawaii.gov

Overview of presentation

- **Traumatic brain injury (TBI) and Spinal Cord Injury (SCI)**
 - Data source: medical records from emergency department (ED) visits, and hospitalizations
 - Hawaii Health Information Corporation
 - Captures mostly TBI/SCI morbidity or nonfatal injuries
 - Defined by diagnostic codes
 - ICD-9CM (through 9/2015) and ICD-10CM (10/2015-present)
- **Stroke**
 - Data source: Hawaii Stroke Registry
 - Trends by type of stroke
 - Role of EMS in stroke care

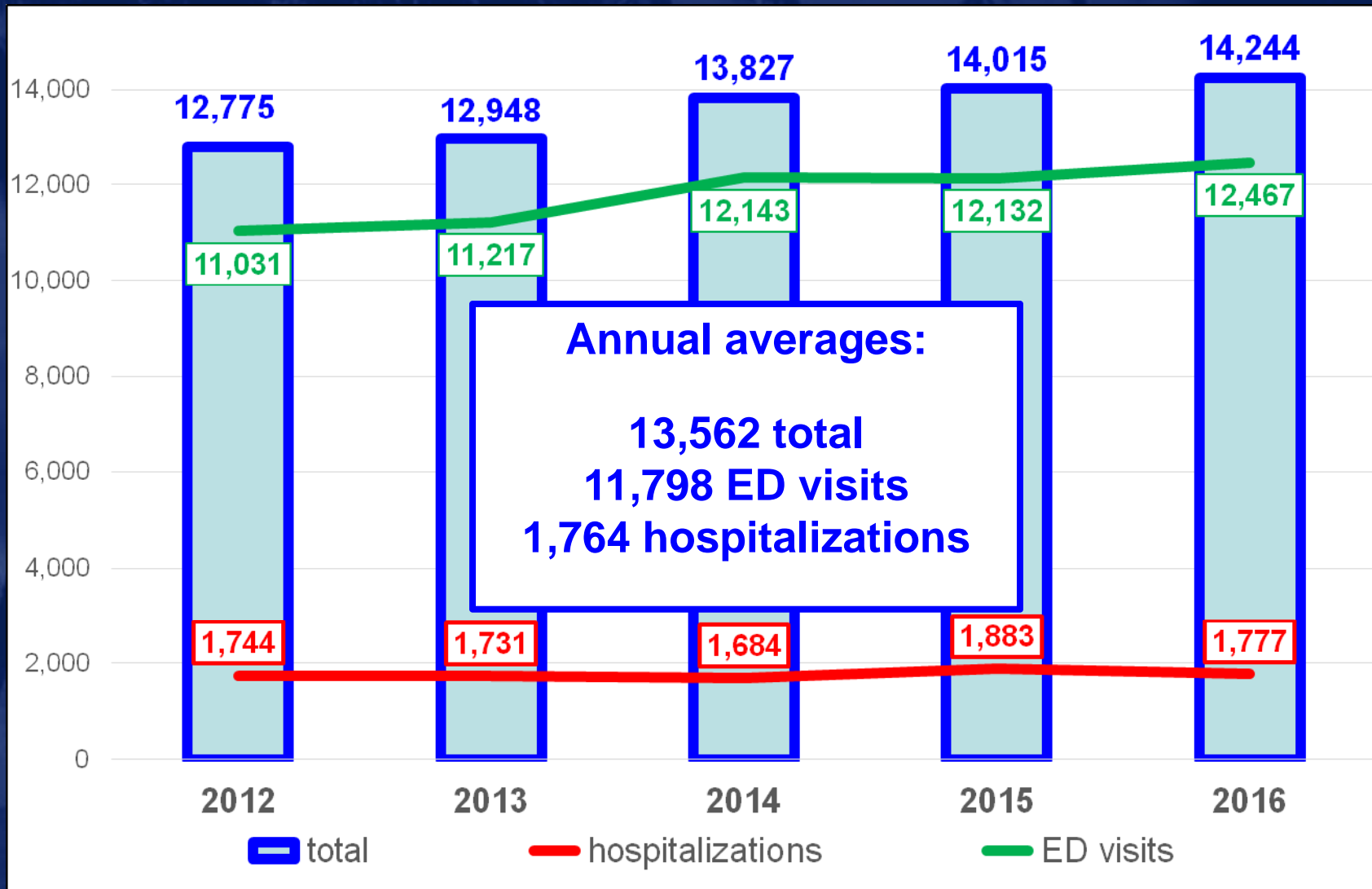
The background of the slide is a dark blue, monochromatic image of a tropical beach at sunset or sunrise. Several palm trees are silhouetted against a lighter, cloudy sky. The ocean is visible in the distance. The overall tone is somber and professional.

Traumatic Brain Injury in Hawaii, 2012-2016

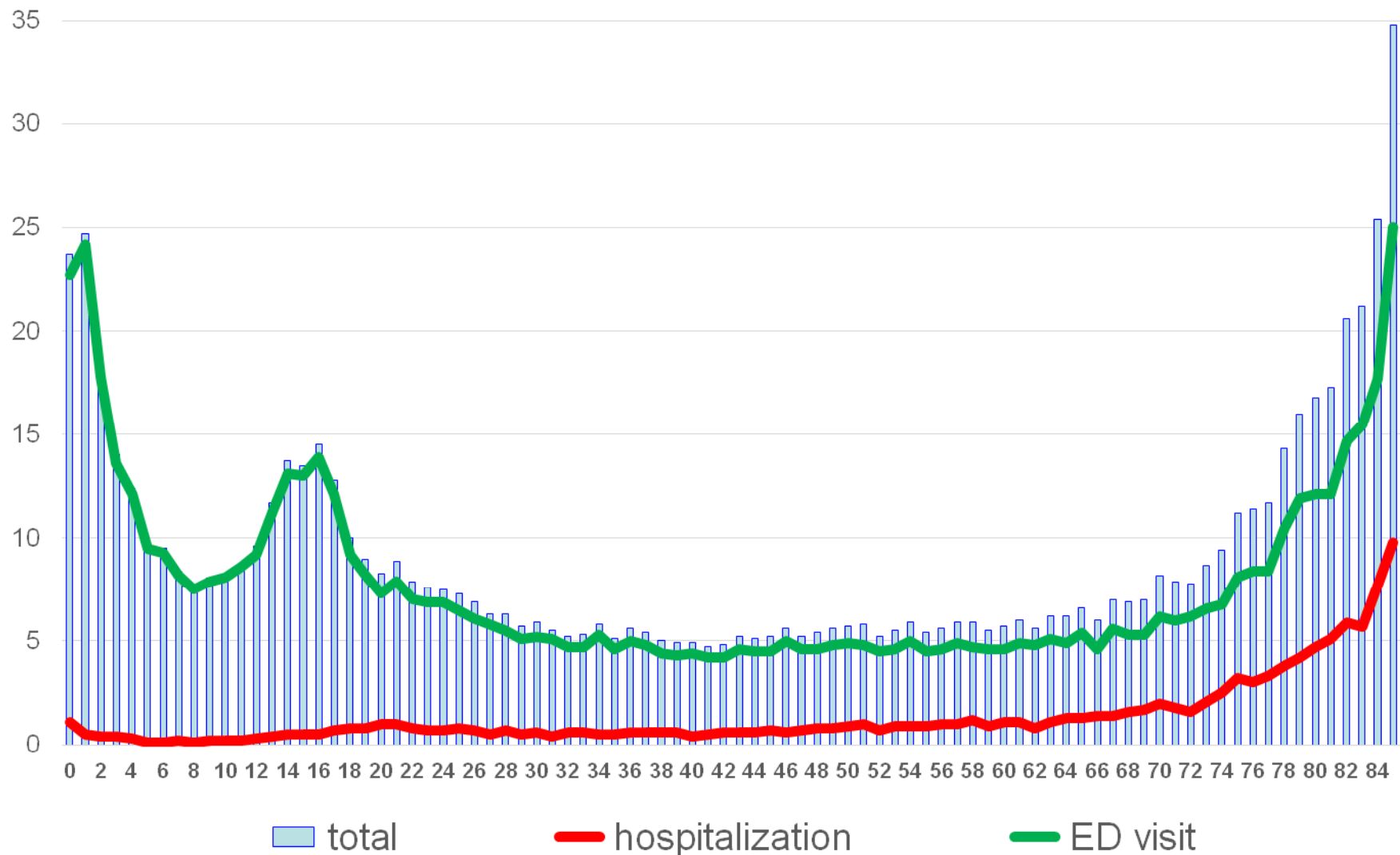
Clinical description of hospital-treated TBI in Hawaii, by level of care, 2012-2016

	ED visits (11,798/year)	Hospitalizations (1,764/year)	Total (13,562/year)
Diagnoses			
Concussions	2,850 (24%)	231 (13%)	3,082 (23%)
Other intracranial injuries	258 (2%)	975 (55%)	1,233 (9%)
Skull fractures	199 (2%)	351 (20%)	550 (4%)
"Unspecified head injuries"	8,490 (72%)	207 (12%)	8,697 (64%)
Injury-related principal diagnosis	92%	84%	91%
Length of care and financial charges			
Ave. length of stay (days)	1.0	7.3	1.8
Total number of days	11,798	12,939	24,737
Average charge	\$3,294	\$53,383	\$9,809
Total charges	\$38.9 million	\$94.2 million	\$133.0 million

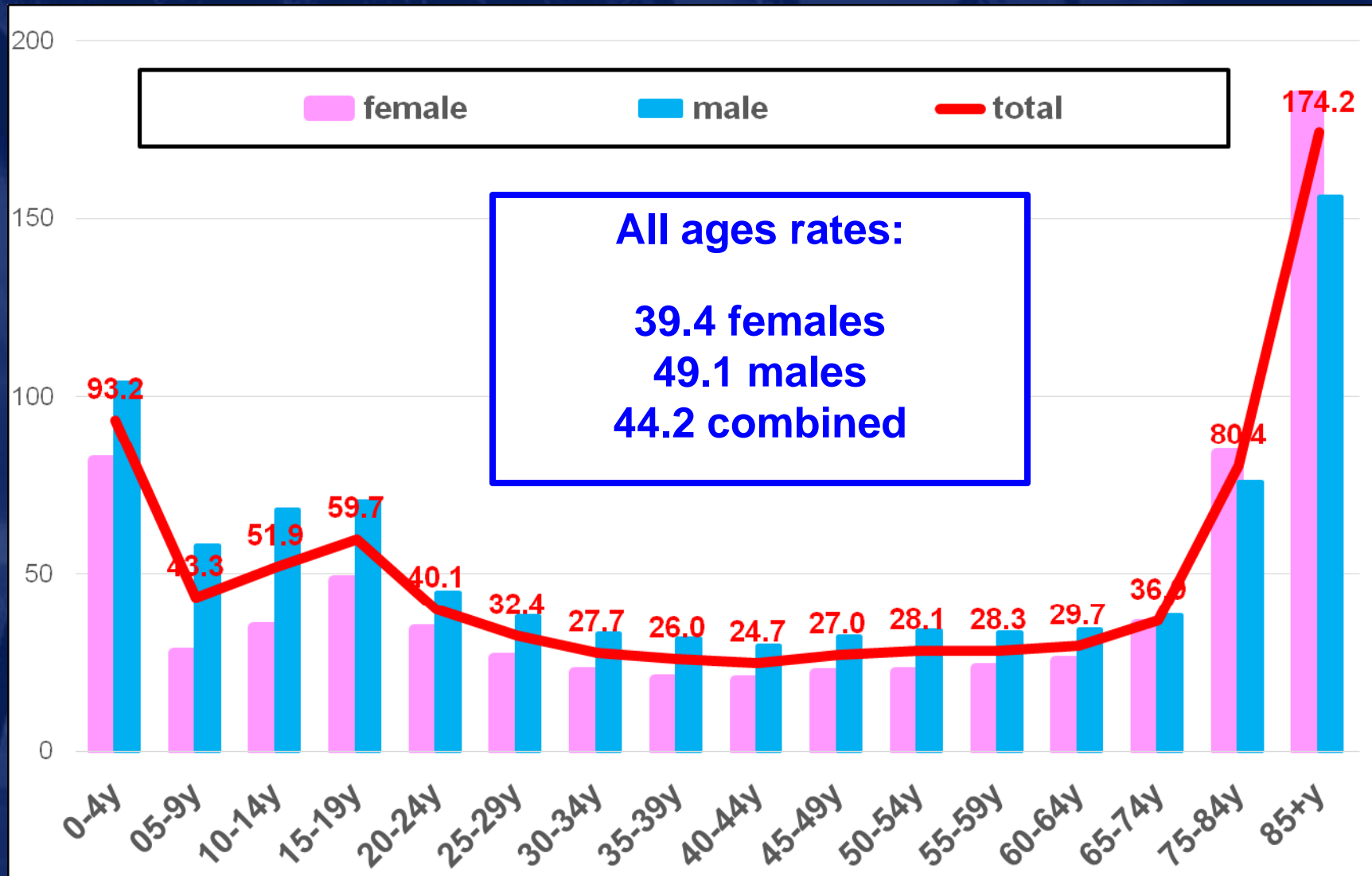
Annual number of hospital treatments for TBI in Hawaii, by level of care, 2012-2016



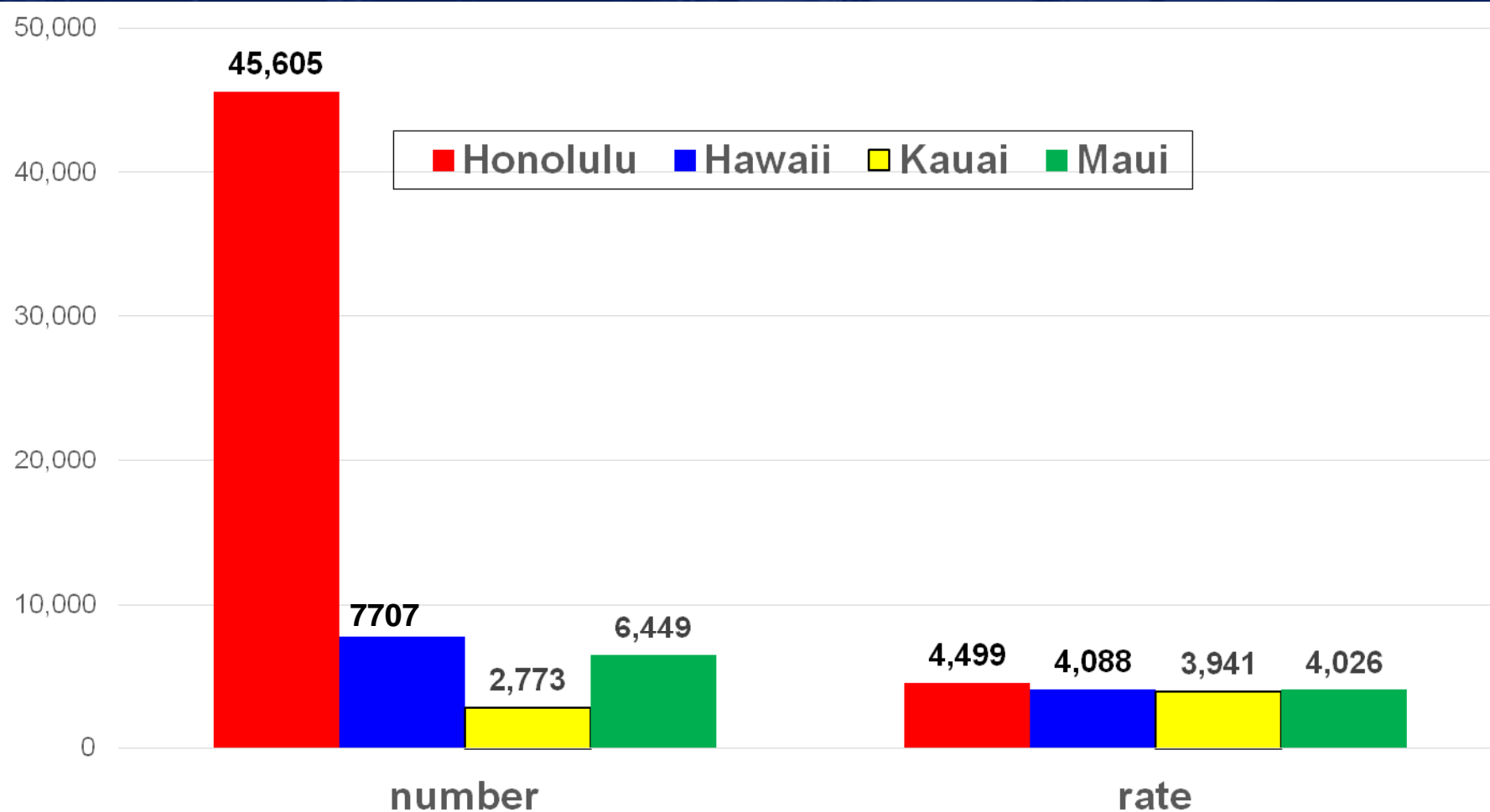
Average annual rate (per 1,000) of TBI among Hawaii residents, by age and level of hospital care, 2012-2016



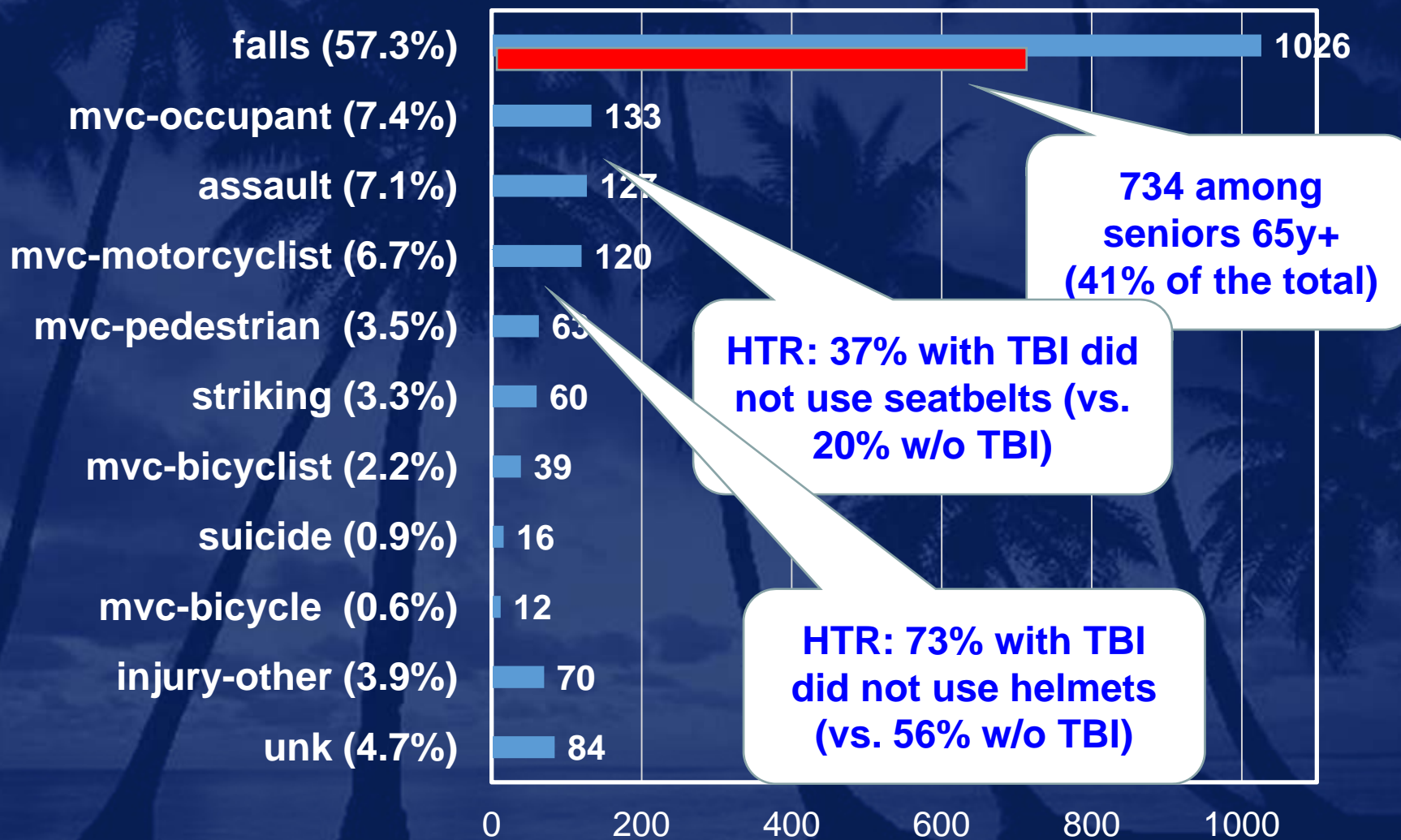
Five-year rates (/1,000 residents) of hospital treatments for TBI, in Hawaii, by patient gender, 2012-2016



Average annual number and 5-year age-adjusted rate (/100,000) of TBI in Hawaii, by county of residence, 2012-2016



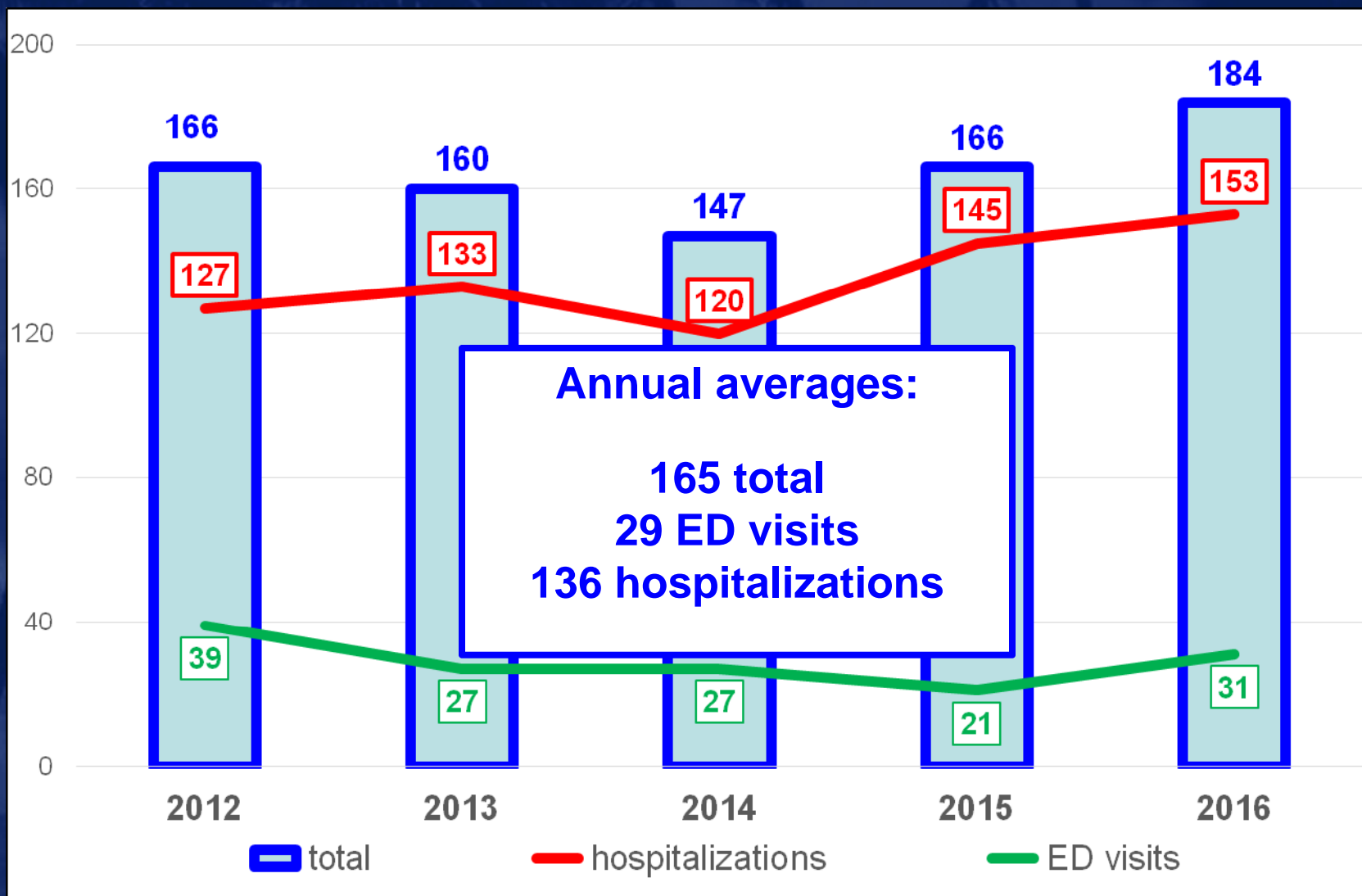
Causes of TBI hospitalizations and fatalities in Hawaii, 2012-2016 (Average annual number)



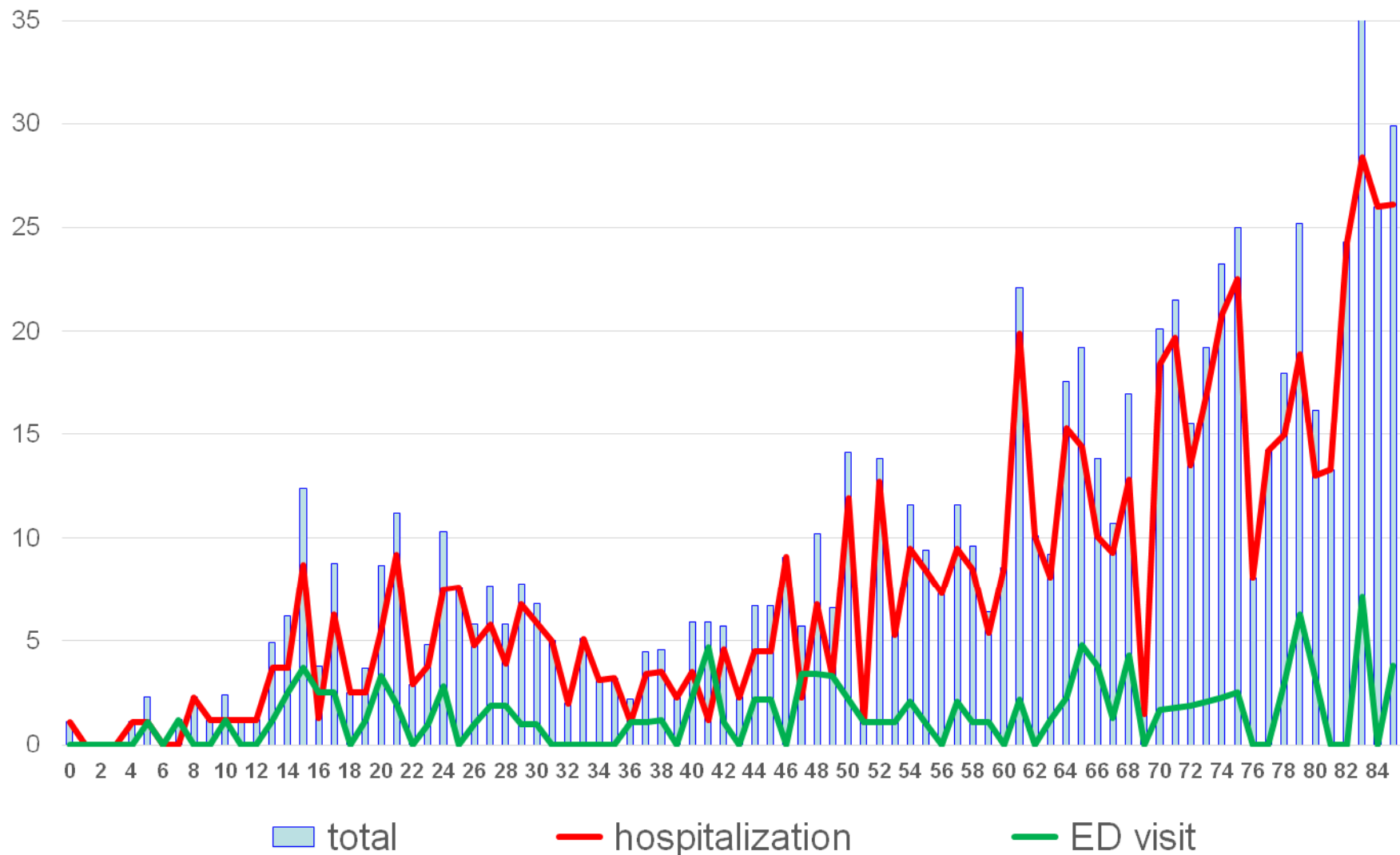
The background of the slide is a dark blue image featuring silhouettes of several palm trees leaning towards the right. In the distance, a calm ocean meets a horizon under a cloudy sky.

Spinal Cord Injury in Hawaii, 2012-2016

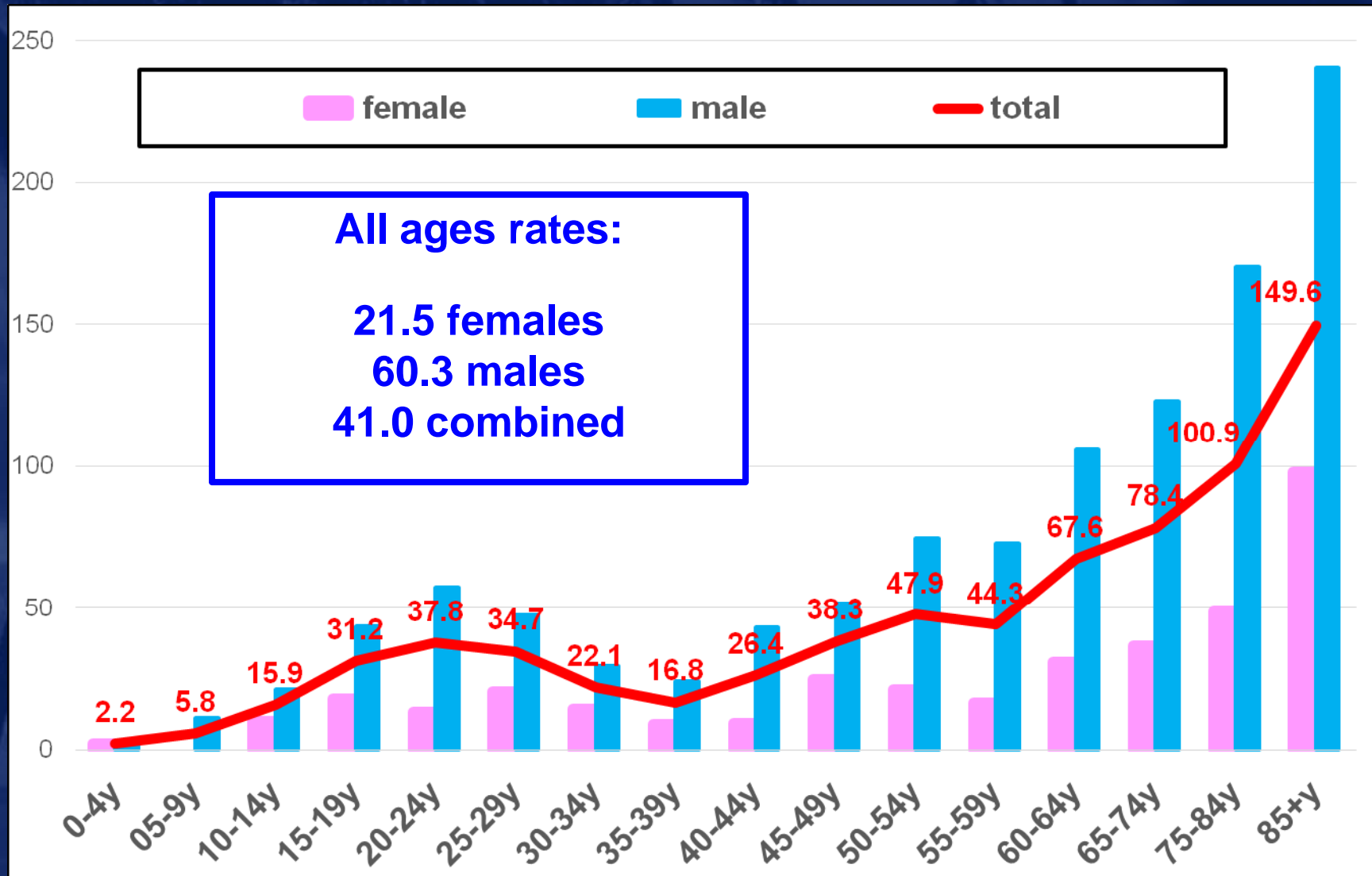
Annual number of hospital treatments for SCI in Hawaii, by level of care, 2012-2016



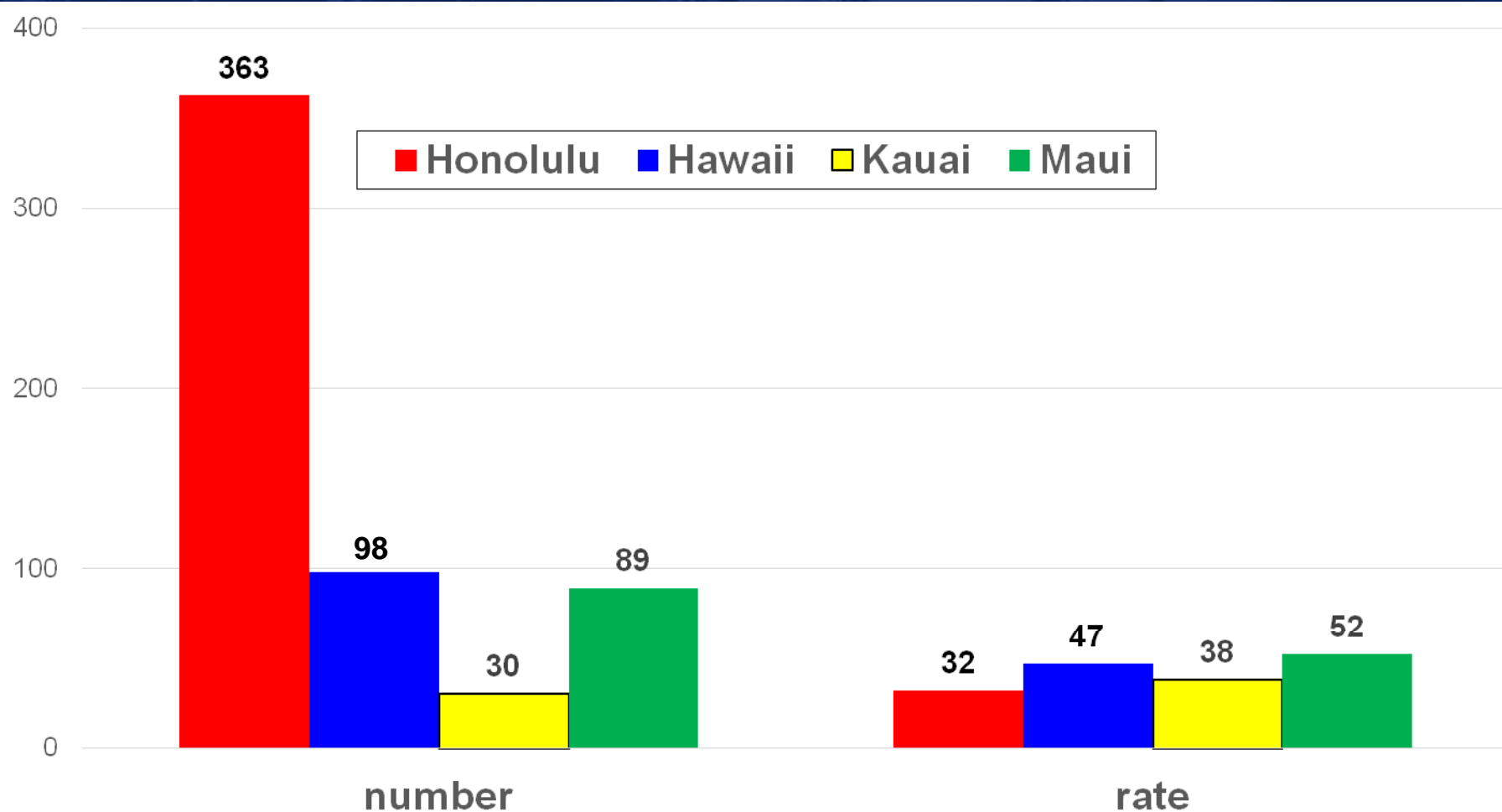
Average annual rate (per 1,000) of SCI among Hawaii residents, by age and level of hospital care, 2012-2016



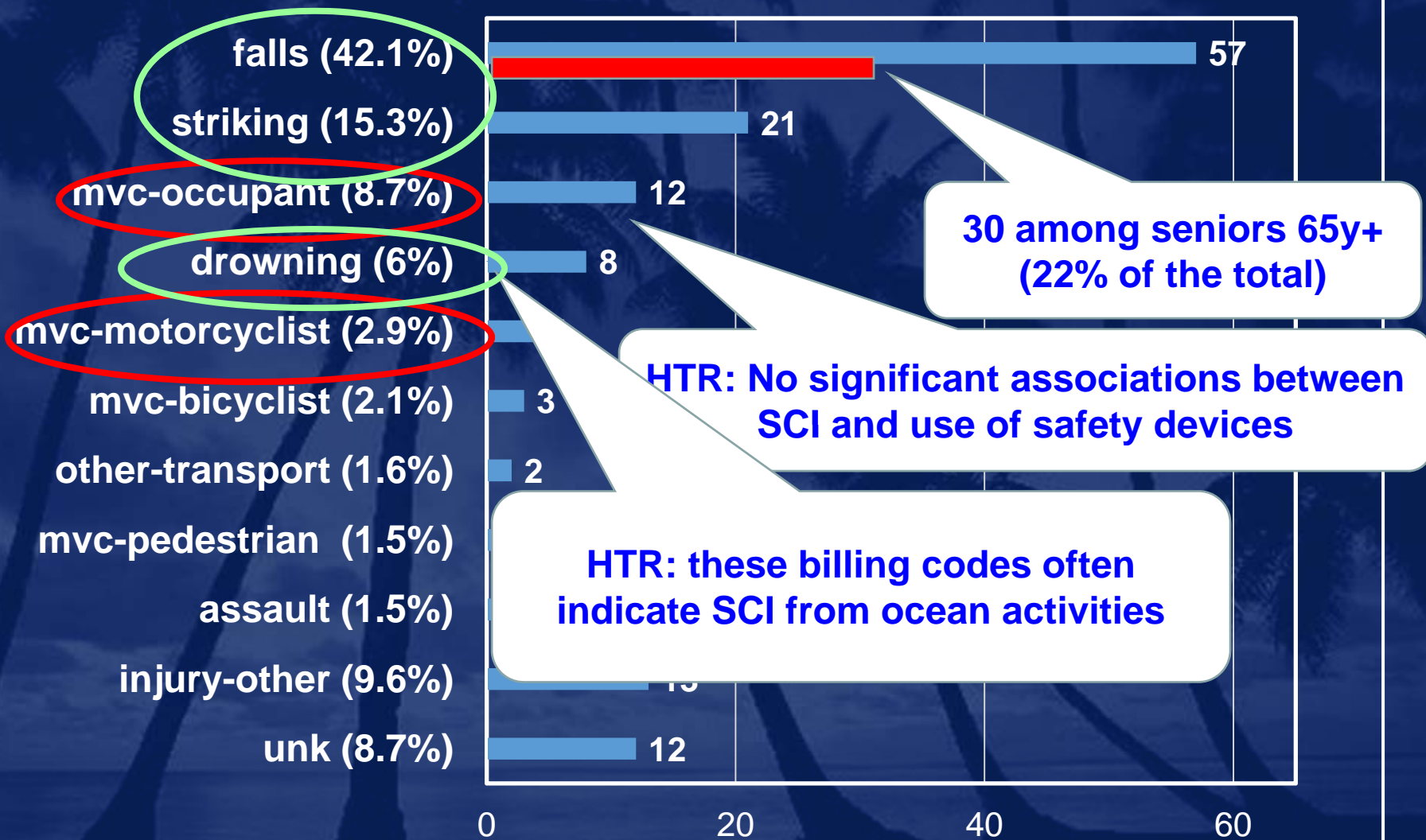
Five-year rates (/100,000 residents) of hospital treatments for SCI, in Hawaii, by patient gender, 2012-2016



Average annual number and 5-year age-adjusted rate (/100,000) of SCI in Hawaii, by county of residence, 2012-2016

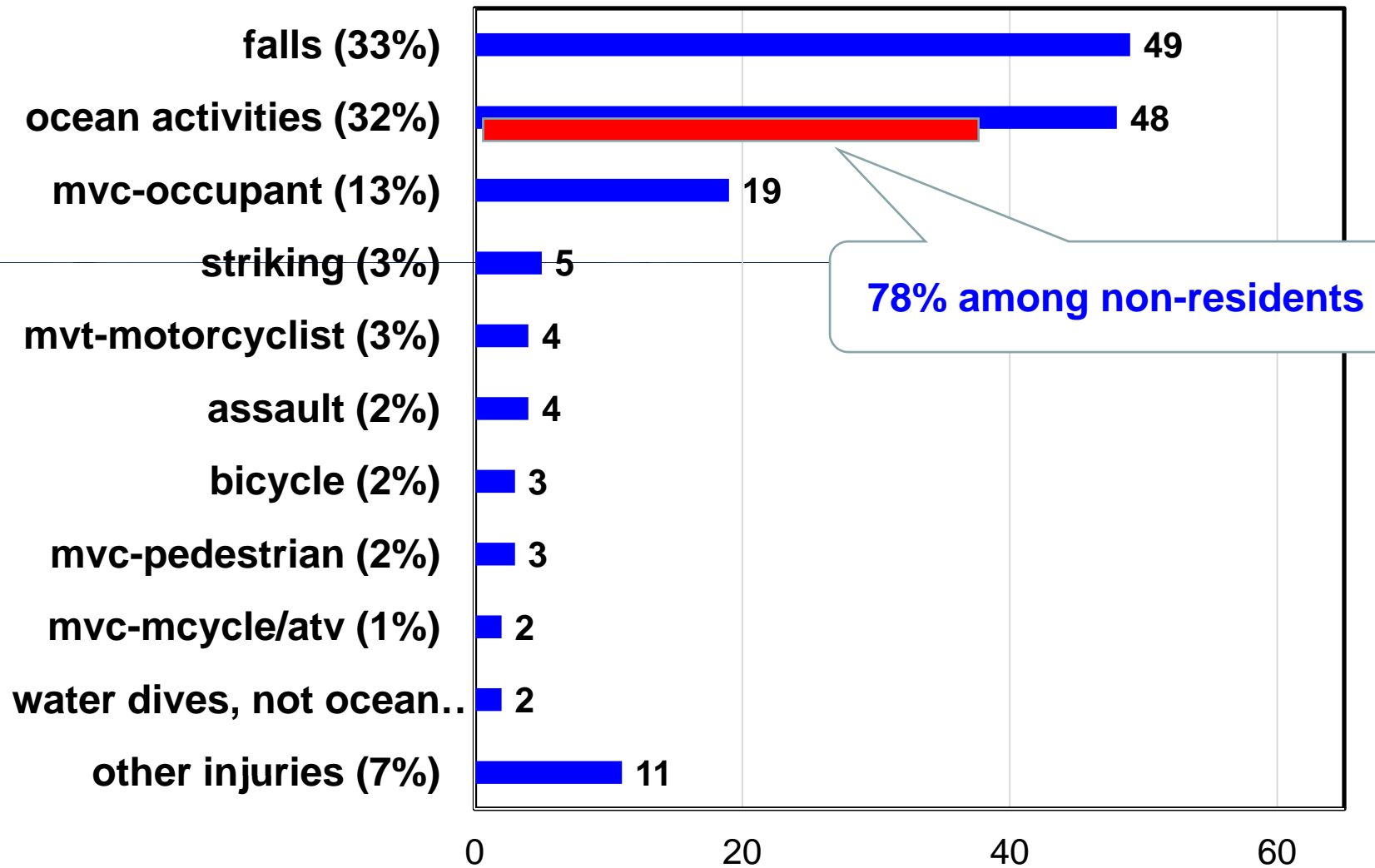


Causes of SCI hospitalizations and fatalities in Hawaii, 2012-2016 (Average annual number)

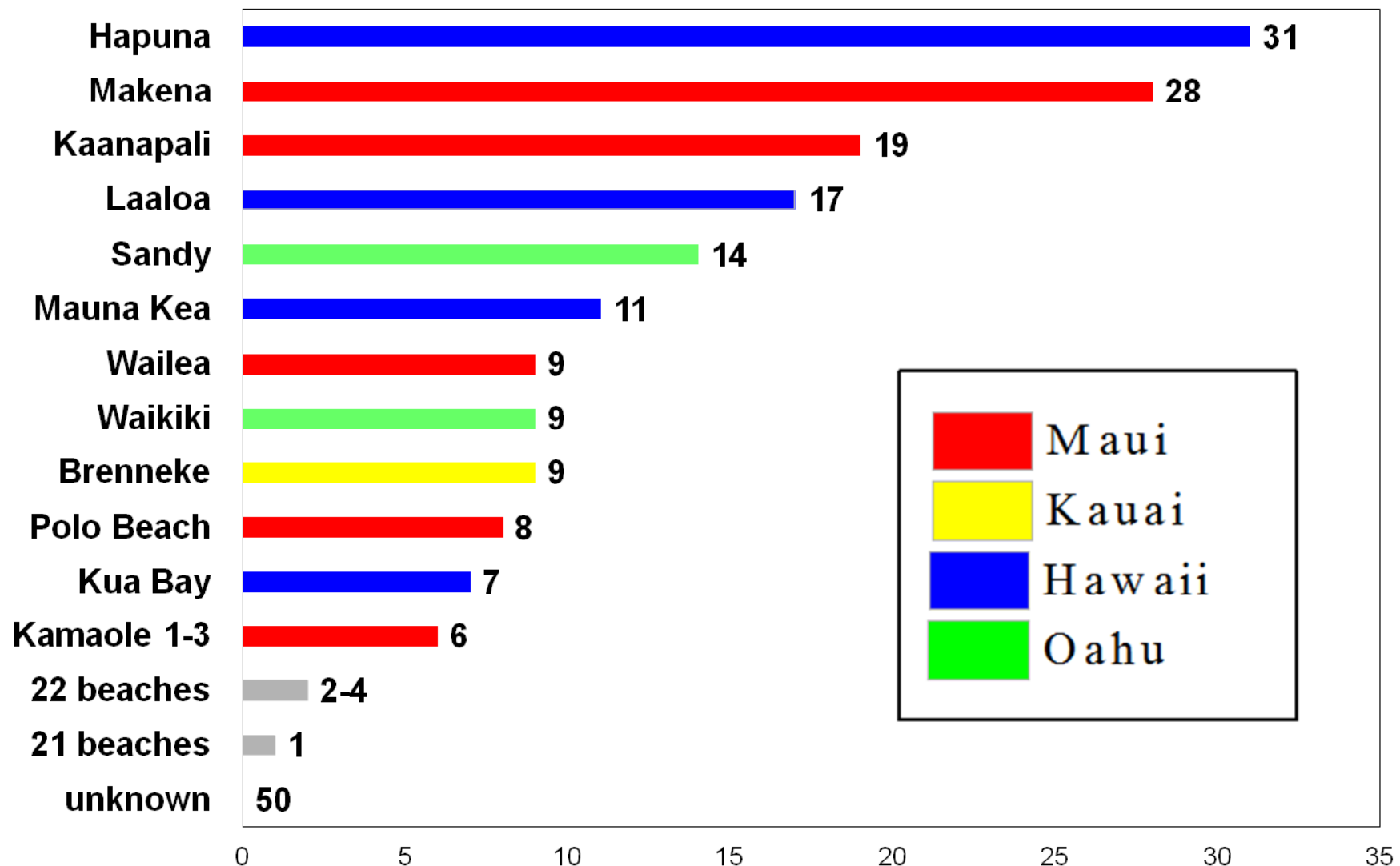


HTR data: detailed causes of SCI in Hawaii, 2012-2016

(Average annual number)



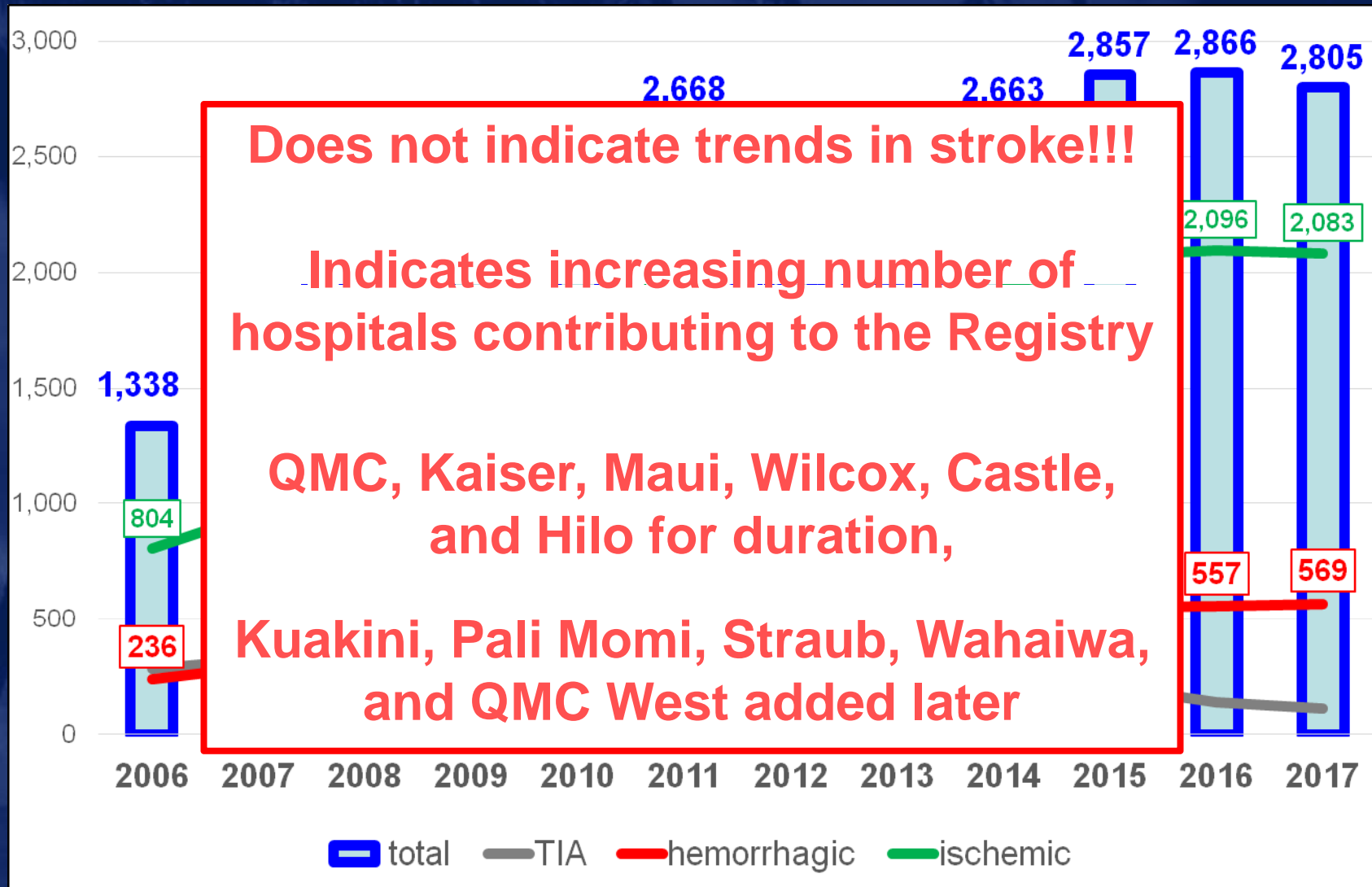
Hawaii Trauma Registry: Location (beach) of spinal cord injuries from ocean activities in Hawaii, 2012-2016



The background of the slide is a dark blue, monochromatic image of a tropical beach at sunset or sunrise. Several palm trees are silhouetted against a lighter, cloudy sky. The ocean is visible in the distance. A white rectangular box is centered on the slide, containing the title text.

Stroke in Hawaii

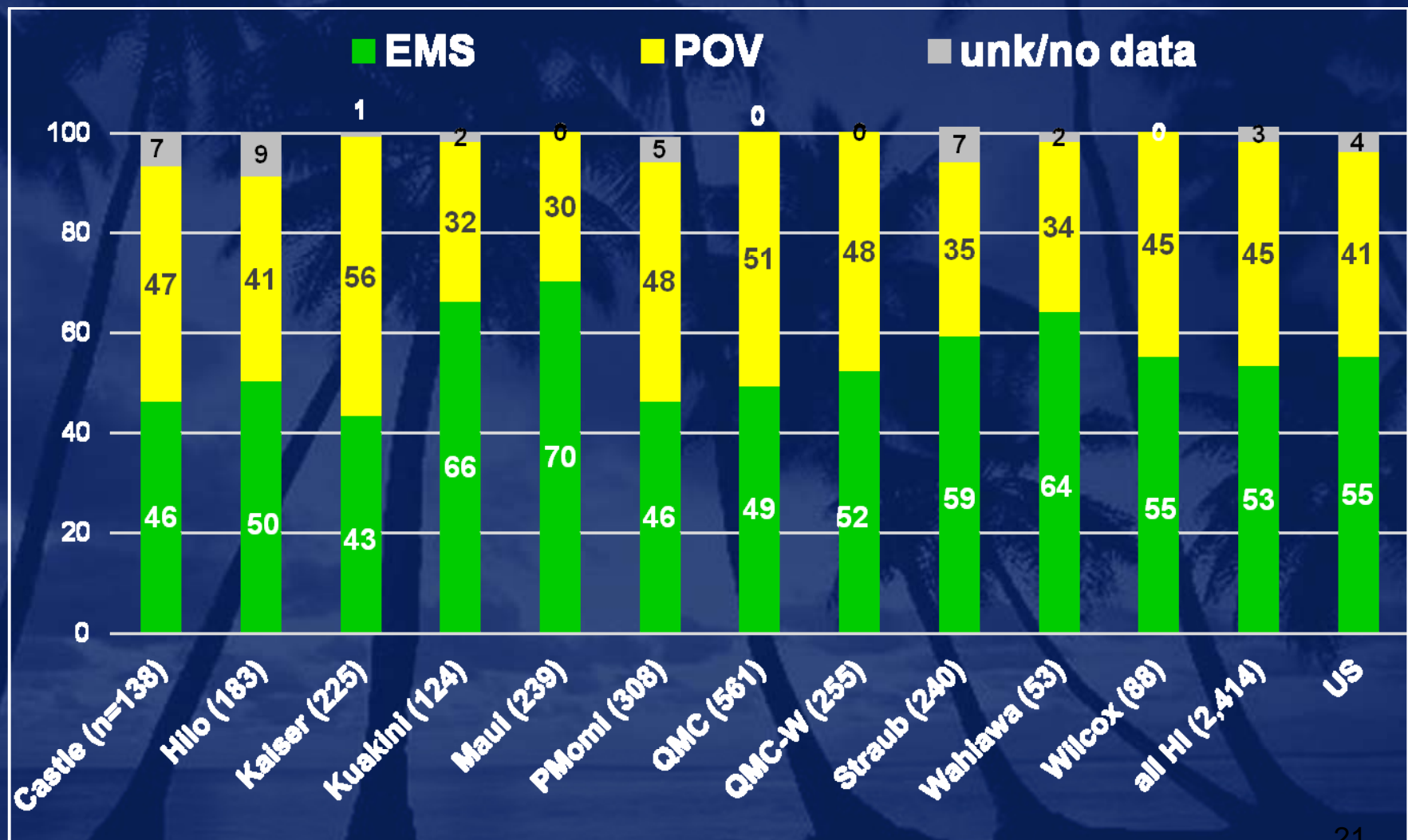
Annual number of records in the Hawaii Stroke Registry, by type of stroke, 2016-2017



The background of the slide is a dark blue image featuring silhouettes of several palm trees leaning over a calm ocean. The sky is a lighter shade of blue, suggesting a sunset or sunrise. A white rectangular border is centered on the slide, enclosing the title text.

Patient arrival mode

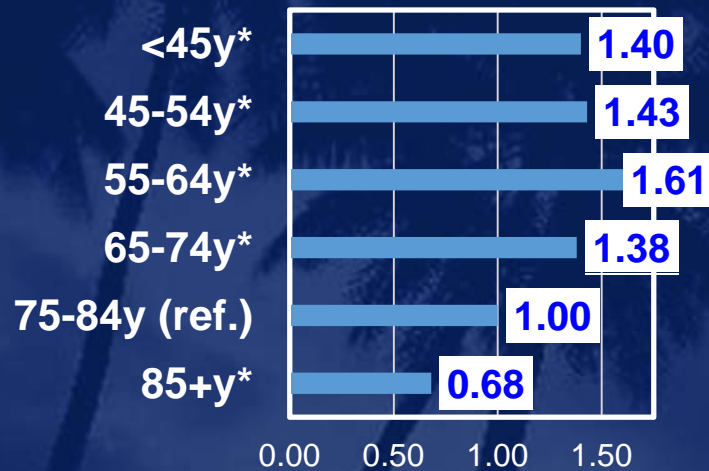
Distribution of arrival mode of patients in the Hawaii Stroke Registry, by facility, 7/2016-6/2017 (Excludes patients who were transferred from another hospital.)



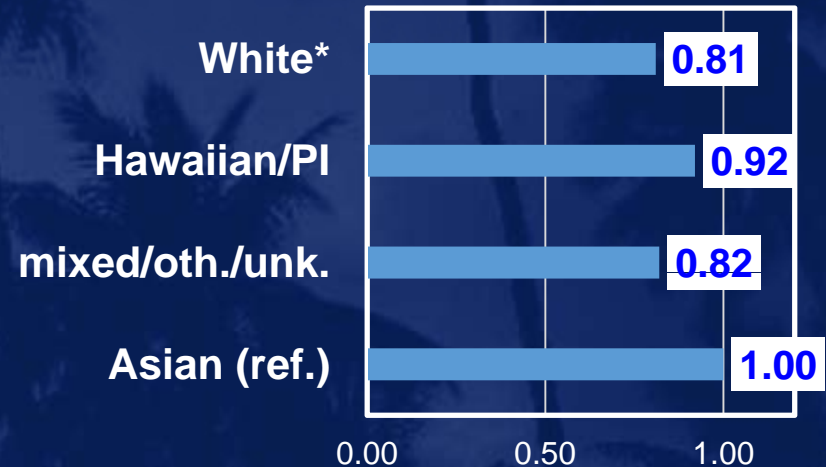
Adjusted odds ratios of stroke patient arrival by private vehicle, 2012 – 9/2016

(*Denotes statistically significant difference in OR, compared to reference group.)

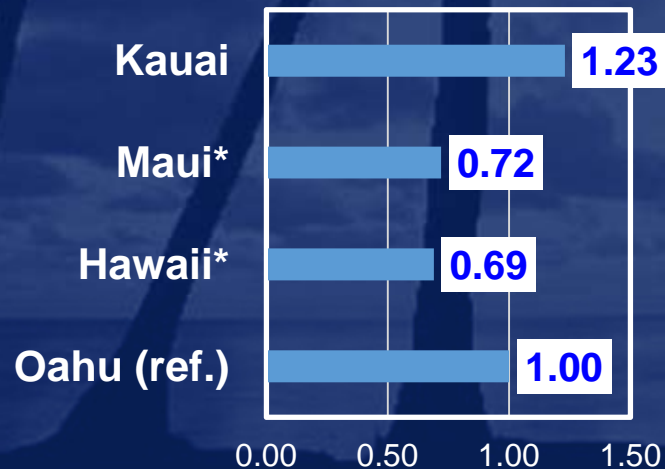
Age group



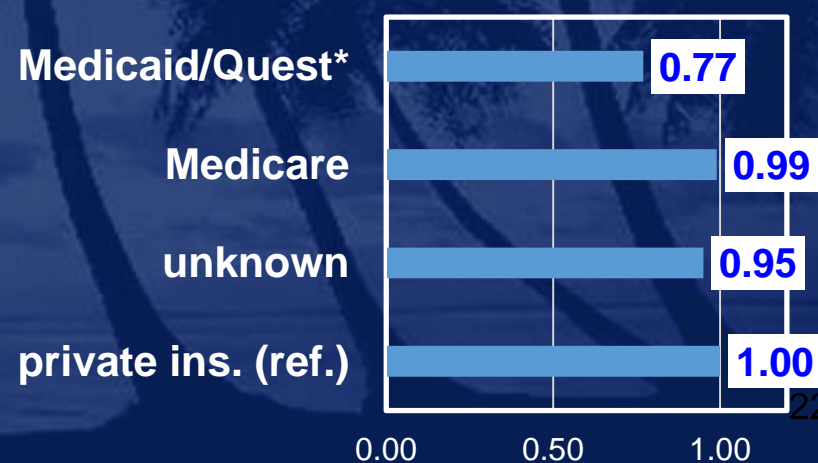
Patient race



County of hospital



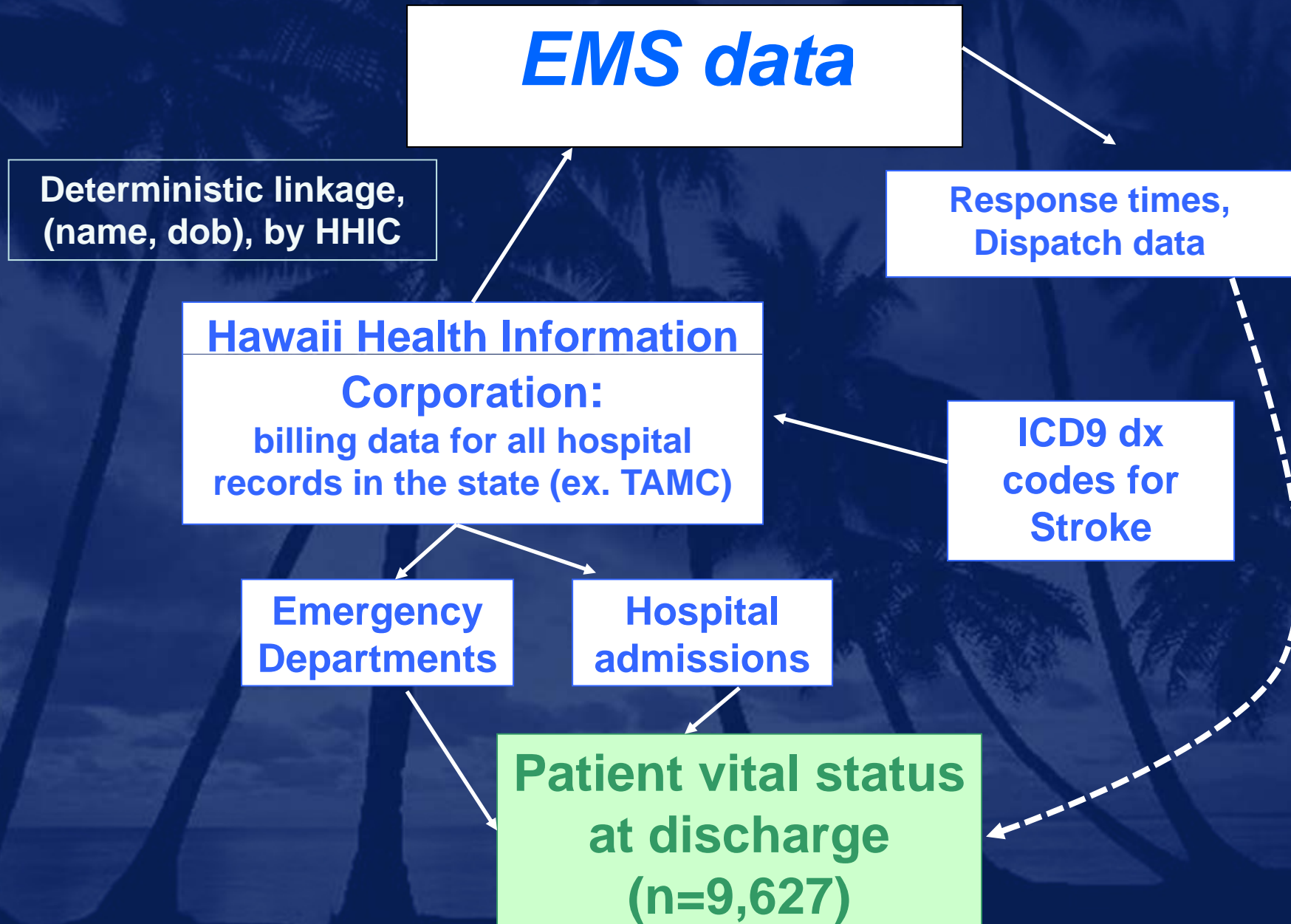
Healthcare coverage



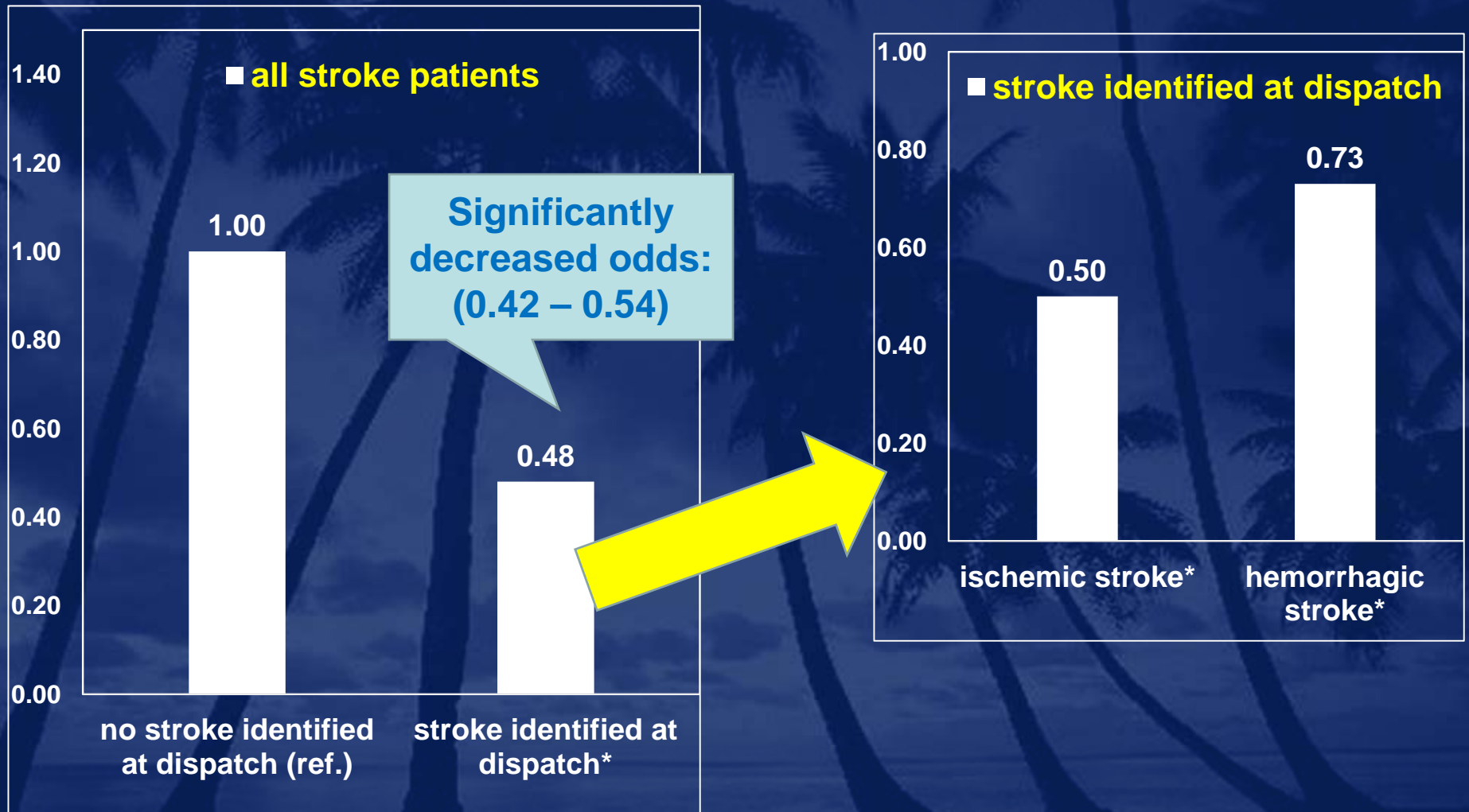
The background of the slide is a dark blue, monochromatic image of several palm trees silhouetted against a lighter blue sky with soft, wispy clouds. The trees are leaning at various angles, creating a tropical and serene atmosphere.

Associations with identification of stroke at 911 dispatch

Summary of data linkage, 2010-2013



Adjusted* odds of death among EMS-transported stroke patients in Hawaii, by identification of stroke at dispatch, 2010-2013



*Adjusted for patient age, gender and county of initial EMS provider

Summary

- **Traumatic Brain Injury (~13,600/year)**
 - *Increasing numbers, particularly for ED visits*
 - *72% of ED visits are “unspecified head injury”*
 - *Higher risk*
 - *Toddlers, teens, and seniors*
 - *Falls among seniors leading cause of hospitalizations*
 - *Oahu residents*
- **Spinal Cord Injury (165/year)**
 - *Mostly hospitalizations (increasing)*
 - *Higher risk*
 - *Progressive rates across age range*
 - *Neighbor Island residents*
- **Stroke (2,740/year in Registry)**
 - *Only about half transported by EMS*
 - *Recognition of stroke at dispatch → increased survival*

HEAD, NECK, SPINE PROJECT





Hawaii Concussion Awareness Management Program

- Funded by the State of Hawaii.
- Line item in the UHM College of Education.
- Development of online education tool BrainSpace.



Welcome to **HCAMP BrainSpace**, an information and resource portal for Students, Parents, Athletes, Coaches and Educators. To continue, please select a course from the options below.

For Athletics

Training courses for coaches, athletes and parents at all youth sports levels.

High schools



Designed for coaches, officials, and other stakeholders. Completion of this training course fulfills the HI-SAA requirement for concussion awareness.

High schools

Youth/Community



Provides information and training for coaches, educators, officials, and other stakeholders involved in youth leagues and community organizations.

Youth/Community

Parents



For parents of athletes from through high school, providing the nature and recovery process of concussions.

Parents

For Educators

Designed to provide educators of all grade levels information on the nature and recovery process surrounding concussions, with a focus on Return to Learn.

Elementary School (K-5)

For faculty and staff working with students in Kindergarten through fifth grade.

Elementary School (K-5)

Middle School (6-8)

For faculty and staff working with students in sixth through eighth grade.

Middle School (6-8)

High School (9-12)

For faculty and staff working with students in ninth through twelfth grade.

High School (9-12)

BrainSpace - Coaches

Module 7 of 11

Why is an action plan important?



All questions must be answered correctly before proceeding.

✓ An Emergency Action Plan is important to ensure everyone knows what to do and what his or her roles are during an emergency situation.

- ☐ True
☐ False

✓ During halftime of a very physical championship basketball game, your starting point guard, Kalani, tells you he has a headache and feels "a little dizzy." He did hit the floor a few times but he got up quickly and continued to play with no obvious problems. There are no medical staff present at this game. Kalani should be able to return to play since he said he didn't hit his head and feels like he can continue to play.

- ☐ Strongly agree
☐ Agree
☐ Disagree
☐ Strongly Disagree

An action plan is a document that lists specific steps that must be taken in order to achieve a specific goal. For liability purposes, every organization should have an action plan with the goal of ensuring the safety of their athletes. The action plan outlines a standard of care, where all decisions are made before the situation occurs. An action plan identifies individual roles and highlights a plan that limits confusion and stress.

Organizations should have **BOTH** an Emergency Action Plan. An Emergency Action Plan is activated when a person is injured and an ambulance needs to be called. A Concussion policy and procedures an organization will implement.

What should an Emergency Action Plan document address?

- When it is necessary to call 911?
- What specific directions are to be given to EMS to get to the location?
- Who will control crowds and parents?
- Importance of maintaining control of situation and how to handle it?
- What is the chain of communication with parents?

BrainSpace - Parents

Module 5 of 10

How do I help a concussed student athlete recover?



All questions must be answered correctly before proceeding.

▶ Alice just received a concussion at a volleyball game this afternoon. She has a headache and is dizzy when moving. She wants to drive to the mall and have dinner with her friends. It is okay for Alice to drive to the mall and have dinner with her friends.

- ☐ Strongly Agree
☐ Agree
☐ Disagree
☐ Strongly Disagree

▶ When recovering from a concussion, about 8 hours of constant sleep is important.

- ☐ True
☐ False

Submit

Recovering from a concussion is not an easy task for anyone, especially in the adolescent population. Unlike other injuries, concussions can affect all aspects of an individual's life, not just their athletic performance. Symptoms may be triggered or worsened by everyday activities, such as phone use, TV/screen use, reading, writing, riding in the car, and even having a conversation.

It is important to assist the concussed individual's recovery that an effective treatment plan is followed, incorporating clear behavior guidelines to return the concussed individual safely back to their life routine, return to school and finally safely return to sports.

HNS Project Overview

- Creating an online curriculum and resource.
- Learning objectives and lessons will align with the following Hawaii Content and Performance Standards III (HCPS III) for Health: 1, 3, 4 and 8.
- It is important for the students to receive this information at school, then share learned concepts to parents/guardians.
- Informed choices and decisions about their health and be advocates for health and safety as it pertains to head, neck, and spine injuries when they leave school and engage in various activities with their friends.

Meeting the Standards

Standard 1: Students will comprehend concepts related to health promotion and disease prevention to enhance health.

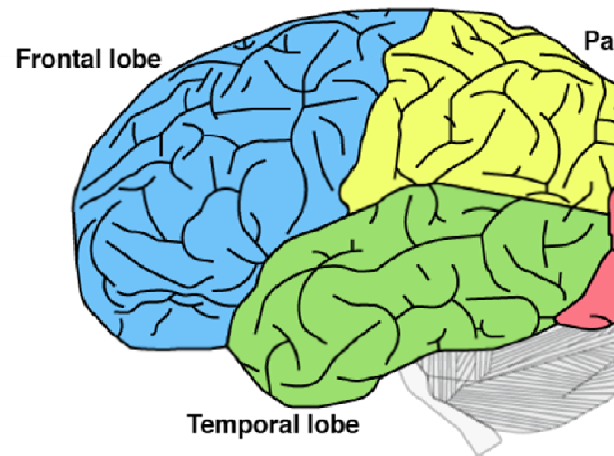
Standard 3: Students will demonstrate the ability to access valid information and products and services to enhance health.

Standard 4: Students will demonstrate the ability to use interpersonal communication skills to enhance health and avoid or reduce health risks.

Standard 8: Students will demonstrate the ability to advocate for personal, family, and community health.

Anatomy of the brain - Lobes

The brain can be broken down into **lobes** which are **smaller sections** that make up the left and right hemispheres. The lobes each have their own responsibilities and are responsible for different types of activity.



- **Frontal** - Thinking, reasoning, problem solving, behavior, decision making, movement
- **Parietal** - Sensation, intellect, language, spatial processing

Brain injuries



Left: CT scan of a human skull in 3D (Arielinson); Right: MRI showing pulsation of cerebrospinal fluid (Mevit Dilmun)

Although the brain is protected by the bones of the skull, thin membranes called meninges, and cerebrospinal fluid (a watery fluid), it can still be injured.

A **traumatic brain injury (TBI)** is a head injury that negatively impacts normal brain functioning. TBI can range in severity from **mild to severe**.

A **mild TBI (mTBI)** is a **brief change** in brain functioning, mental status, health or consciousness after the injury. There are **no structural changes** during MRI or CT imaging.

A **severe TBI** results in **prolonged or an extended period** of unconsciousness, mental impairment, or amnesia after the injury. **Structural changes** are noted during MRI and CT.

TBI or mTBIs occur when our brain's chemicals are disrupted. Our brain controls all of our "thinking" and "doing" by conducting millions and millions of chemical reactions per second. A disruption in any of these chemical reactions in our brain can result in temporary change in our ability to think and function normally.

► Which is not a lobe?

- ☐ Occipital
- ☐ Temporal
- ☐ Cerebellum

All questions must be answered correctly before proceeding.

► What protects the brain?

- ☐ Bones, skin, muscle
- ☐ Bone, meninges and cerebrospinal fluid
- ☐ Bones only

► Cerebrum

☐ Thalamus

☐ Pons

► A brain injury

☐ Trauma

☐ Injury

► A brain injury

☐ Trauma

☐ Injury

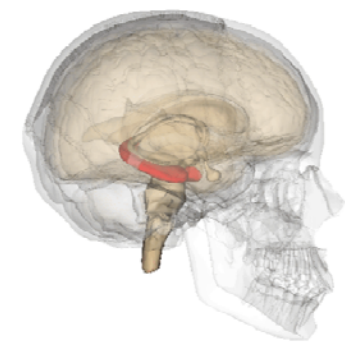
► What is a brain injury?

☐ Loss of consciousness

☐ Seizure

☐ Epilepsy

☐ All of the above



Life Science Databases (LSDB)

The brain is the most complex organ in the body and is made up of gray and white matter. It controls how your body interacts with the environment, how you interact with people around you, how you feel emotionally, and how you use creativity and analytical thinking to resolve problems. The brain is the central information hub of our bodies and is made up of millions of nerves that communicate messages to different parts of the body.

In this module, we will be learning about the brain and what happens to it when it is injured.

- Students will understand the basic anatomy of the brain.
- Students will define terminology used to describe the brain.
- Students will define medical terminology used to describe TBI injuries.
- Students will understand the basic impacts associated with TBI.

HNS Project Overview

Evaluation

- Student Scores

- Formative
- Summative

- Experience Survey

- Parent
- Teacher

Risk factors for head injuries

There are many ways to avoid risk. For head injury, avoid risk at any time. The risk is high. Athletics are not safe. Minimize your risk.

All questions must be answered correctly before proceeding.

► What is the leading cause of TBI?

☐ Football hits

☐ Fist fights

☐ Falls

► Falls are the leading cause of TBI.

☐ True

☐ False

This is a graded evaluation. Please answer each question carefully.

► Some injuries can be avoided.

☐ True

☐ False

► Which of the following is not an unexpected injury?

☐ Getting tripped and spraining your ankle in a soccer game

☐ Hitting a stick while skateboarding and breaking your wrist

☐ Whiplash from a car accident

☐ None of the above, all are unexpected injuries

► The CDC reports that the leading cause of death of people ages 0-19 is:

☐ Intentional injuries

☐ Unintentional injuries

☐ Chronic illness

► Avoiding injury involves:

☐ Following others without thinking for yourself

☐ Knowing your limits

☐ Not looking around

☐ All of the above

Submit

Module selector

4 - Module 4: Introduction to neck and back injury prevention

Note: Modules MUST be deployed in sequential order.

Go

Gradebook

Section 1

Module selector

1 - Module 1: Accidents happen

Note: Modules MUST be deployed in sequential order.

Go

SECTION 1			Modules								
ID	Last	First	1	2	3	4	5	6	7	8	Total
1112	Furutani	Troy	8/8 (100)								100
1111	Ing	Brion	7/8 (87.5)	7/10 (70)							78.8

Where We Are Now

- Obtained UH IRB approval

- Five completed modules

Accidents Happen

Introduction to head injuries

Introduction to cervical/spine injuries

Signs and symptoms of head injuries

Prevention

- Working on three more

Recognizing possible neck and spinal cord

injuries

How to assist

What to do next (support systems)

Intentional versus unintentional injuries

The risk of injury is so high that most people sustain a significant injury that negatively affects or impairs their activities of daily living in some way during their lifetime. These injuries can be classified as intentional or unintentional injuries.

- Intentional injuries result from acts of violence that cause harm to others or one's self (i.e. abuse, suicide, etc.).
- Unintentional injuries, on the other hand, are most often the result of accidents or risky behavior. Falls, poisoning, diving accidents, sports, and transportation incidents are common reasons for such injuries. The CDC reports that in the United States, unintentional injuries are the leading cause of death among youth 0-19 years of age.
- Fortunately, most people make.

Reportable symptoms

Reportable symptoms are things that someone who is concussed might tell you that he or she is feeling.

Reportable symptoms: My friend may tell me or an adult that they have...

Physical	Cognitive
Headache	Feeling in a 'fog'
Blurred vision	Feeling slowed down
Dizziness or "seeing stars"	Difficulty concentrating
Nausea	Difficulty remembering
Numbness/tingling	Easily confused
Sensitivity to light or noise	
Disorientation	
Neck pain	

All questions

▶ Module 1

• True

• False

▶ Module 2

• True

• False

What is a concussion?



Concussion is a type of brain injury defined as a "complex pathophysiological process affecting the brain, induced by biomechanical forces." (1-5)

A concussion represents a disturbance to brain function caused by a blow to the head or a "violent shaking" of the head, neck, or body. A concussion can happen even if a person is not hit directly in the head. An impact force may be transmitted to the brain from a blow somewhere on the body.

Concussions typically result in the rapid onset of short-lived impairments of brain function and result in a loss of consciousness.

Types of spine injuries

Chronic vs. Acute

Acute injuries are sudden and can sometimes need more immediate attention. For example, acute injuries can be a broken bone, falling off a bike and hitting your head, or whiplash from a car accident. While chronic injuries are those that happen over longer periods of time such as overuse injuries from sports, **Tooth Neck** (tooth syndrome), and those related to stress.

Advocating safety and good decision making

Using good communication skills will help to keep you healthier.

Saying "no" might sound easy, but it is often harder than we think. Are you able to say "no" to your friends?

If you have to question yourself, the answer is probably no.

Saying "no" can get easier with practice and by knowing how to do it. Being able to say "no" and using a few refusal skills can save you from risky situations.

Using humor such as, "Hey, I need all the brain cells I can get nowadays. No thanks," or "I always thought I'd make the news one day, but I don't want it to be over the lifeguards coming to my rescue," can help to lighten the mood.

Learning how to use or make up excuses or reasons can be helpful too. Here are a couple:

"My mom just texted me. Gotta go before I lose my phone."

"I have a big game this weekend. I can't risk missing it."

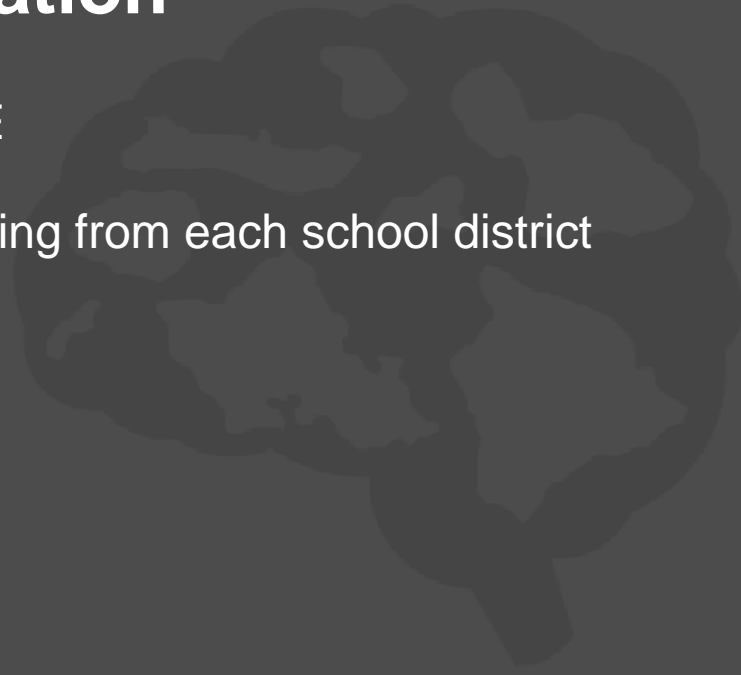
by looking down at an electronic device, a forward head posture causes pain and shoulders. It can also lead to more serious

its. Ligaments connect bones. A commonly is the stretching or tearing of muscle of bone. For instance you can strain a muscle

traumatic injuries. A fracture is a partial or can fracture a vertebrae. A puncture can the neck such as strangulation, or loss of . Punctures are more rare and are often uries. Nontraumatic injuries are injuries to the injured area. Loss or blood flow, of nontraumatic injuries.

Teacher Validation

- Working with the DOE
- Representative sampling from each school district



Upcoming Items

- Teacher user manual
- Assessing parent/teacher/student collaboration survey
- Launch Fall 2018

